



Title: A Phase 3 Randomized, Double-Blind, Placebo-Controlled Study, with a Vedolizumab IV Reference Arm, to Evaluate the Efficacy and Safety of Vedolizumab Subcutaneous as Maintenance Therapy in Subjects With Moderately to Severely Active Ulcerative Colitis Who Achieved Clinical Response Following Open-Label Vedolizumab Intravenous Therapy

NCT Number: NCT02611830

Protocol Approve Date: 28 September 2016

Certain information within this protocol has been redacted (ie, specific content is masked irreversibly from view with a black/blue bar) to protect either personally identifiable information (PPD) or company confidential information (CCI).

This may include, but is not limited to, redaction of the following:

- Named persons or organizations associated with the study.
- Proprietary information, such as scales or coding systems, which are considered confidential information under prior agreements with license holder.
- Other information as needed to protect confidentiality of Takeda or partners, personal information, or to otherwise protect the integrity of the clinical study.



PROTOCOL

A Phase 3 Randomized, Double-Blind, Placebo-Controlled Study, with a Vedolizumab IV Reference Arm, to Evaluate the Efficacy and Safety of Vedolizumab Subcutaneous as Maintenance Therapy in Subjects With Moderately to Severely Active Ulcerative Colitis Who Achieved Clinical Response Following Open-Label Vedolizumab Intravenous Therapy

Efficacy and Safety of Vedolizumab SC as Maintenance Therapy in Ulcerative Colitis

Sponsor: Takeda Development Center Americas, Inc.
One Takeda Parkway, Deerfield, IL 60015

Takeda Development Centre Europe, Ltd.
61 Aldwych, London, WC2B 4AE
United Kingdom

Takeda Development Center Asia, Pte. Ltd.
Biopolis Road, Nucleos North Tower Level 4
Singapore, 138567

Takeda Pharmaceutical Company Limited,
1-1, Doshomachi 4-Chome, Chuo-ku Osaka 540-8645, Japan

Study Number: MLN0002SC-3027

IND Number: 118980 **EudraCT Number:** 2015-000480-14

Compound: Vedolizumab SC

Date: 28 September 2016 **Amendment Number:** 05

Amendment History:

Date	Amendment Number	Amendment Type	Region
26 February 2015	Initial Protocol	Not applicable	Global
10 November 2015	01	Substantial	Global
10 February 2016	02	Substantial	Global
12 May 2016	03	Substantial	Global
26 July 2016	04	Substantial	Global
28 September 2016	05	Substantial	Japan

CONFIDENTIAL PROPERTY OF TAKEDA

This document is a confidential communication of Takeda. Acceptance of this document constitutes the agreement by the recipient that no information contained herein will be published or disclosed without written authorization from Takeda except to the extent necessary to obtain informed consent from those persons to whom the drug may be administered. Furthermore, the information is only meant for review and compliance by the recipient, his or her staff, and applicable institutional review committee and regulatory agencies to enable conduct of the study.

1.0 ADMINISTRATIVE INFORMATION

1.1 Contacts

A separate contact information list will be provided to each site.

TDC sponsored investigators per individual country requirements will be provided with emergency medical contact information cards to be carried by each subject.

General advice on protocol procedures should be obtained through the monitor assigned to the study site. Information on service providers is given in Section 3.1 and relevant guidelines provided to the site.

Contact Type/Role	Americas, Europe, Asia and Japan TDC Contact
Serious adverse event and pregnancy reporting	PPD
Medical Monitor (medical advice on protocol and compound)	
Responsible Medical Officer (carries overall responsibility for the conduct of the study)	

1.2 Approval

REPRESENTATIVES OF TAKEDA

This study will be conducted with the highest respect for the individual participants in accordance with the requirements of this clinical study protocol and also in accordance with the following:

- The ethical principles that have their origin in the Declaration of Helsinki.
- International Conference on Harmonisation E6 Good Clinical Practice: Consolidated Guideline.
- All applicable laws and regulations, including, without limitation, data privacy laws, clinical trial disclosure laws, and regulations.

SIGNATURES

The signature of the responsible Takeda medical officer (and other signatories, as applicable) can be found on the signature page.

PPD



INVESTIGATOR AGREEMENT

I confirm that I have read and that I understand this protocol, the Investigator's Brochure or package insert, as applicable, and any other product information provided by the sponsor. I agree to conduct this study in accordance with the requirements of this protocol and also to protect the rights, safety, privacy, and well-being of study subjects in accordance with the following:

- The ethical principles that have their origin in the Declaration of Helsinki.
- International Conference on Harmonisation, E6 Good Clinical Practice: Consolidated Guideline.
- All applicable laws and regulations, including, without limitation, data privacy laws and regulations.
- Regulatory requirements for reporting serious adverse events defined in Section 10.2 of this protocol.
- Terms outlined in the Clinical Study Site Agreement.
- [Appendix B](#) – Responsibilities of the Investigator.

I further authorize that my personal information may be processed and transferred in accordance with the uses contemplated in [Appendix D](#) of this protocol.

Signature of Investigator

Date

Investigator Name (print or type)

Investigator's Title

Location of Facility (City, State/Province)

Location of Facility (Country)

CONFIDENTIAL

1.3 Protocol Amendment 05 Summary of Changes

This document describes the changes in reference to the Protocol Incorporating Amendment No. 05.

The primary purpose of this amendment is to amend the visit window for Week 6a. Full details on changes of text are given in [Appendix G](#). The following is a summary of the changes made in the amendment:

1. Amendment of visit window for Week 6a.
2. Administrative change to the sponsor address in Japan.
3. Corrected typographical errors, punctuation, grammar, and formatting.

TABLE OF CONTENTS

1.0	ADMINISTRATIVE INFORMATION	2
1.1	Contacts.....	2
1.2	Approval.....	3
1.3	Protocol Amendment 05 Summary of Changes	5
2.0	STUDY SUMMARY	12
3.0	STUDY REFERENCE INFORMATION	15
3.1	Study-Related Responsibilities.....	15
3.2	Principal Investigator/Coordinating Investigator	15
3.3	List of Abbreviations	16
3.4	Corporate Identification	18
3.5	Study Definitions	18
4.0	INTRODUCTION.....	19
4.1	Background	19
4.1.1	Diseases and Current Treatments	19
4.1.2	Vedolizumab.....	20
4.1.2.1	Nonclinical.....	21
4.1.2.2	Clinical Experience With Vedolizumab IV.....	21
4.1.2.3	Clinical Experience With Vedolizumab SC	24
4.2	Rationale for the Proposed Study	26
4.3	Benefit-Risk Assessment	26
5.0	STUDY OBJECTIVES AND ENDPOINTS.....	28
5.1	Objectives.....	28
5.1.1	Primary Objective(s).....	28
5.1.2	Secondary Objectives.....	28
5.1.3	Exploratory Objectives.....	28
5.2	Endpoints.....	29
5.2.1	Primary Endpoints	29
5.2.2	Secondary Endpoints.....	29
5.2.3	Patient Reported Outcome (PRO) Endpoints	30
5.2.4	Exploratory Endpoints	30
6.0	STUDY DESIGN AND DESCRIPTION.....	32
6.1	Study Design	32
6.2	Justification for Study Design, Dose, and Endpoints	36

6.3	Premature Termination or Suspension of Study or Investigational Site.....	38
6.3.1	Criteria for Premature Termination or Suspension of the Study	38
6.3.2	Criteria for Premature Termination or Suspension of Investigational Sites	38
6.3.3	Procedures for Premature Termination or Suspension of the Study or the Participation of Investigational Site(s).....	38
7.0	SELECTION AND DISCONTINUATION/WITHDRAWAL OF SUBJECTS	39
7.1	Inclusion Criteria	39
7.2	Exclusion Criteria	41
7.2.1	Gastrointestinal Exclusion Criteria	41
7.2.2	Infectious Disease Exclusion Criteria	41
7.2.3	General Exclusion Criteria	42
7.3	Excluded Medications and Treatments.....	44
7.3.1	Permitted Medications and Treatments.....	44
7.3.1.1	Oral Corticosteroid Dosing and Tapering	45
7.4	Criteria for Discontinuation or Withdrawal of a Subject.....	46
7.5	Procedures for Discontinuation or Withdrawal of a Subject.....	47
8.0	CLINICAL TRIAL MATERIAL MANAGEMENT	48
8.1	Study Medication and Materials.....	48
8.1.1	Dosage Form, Manufacturing, Packaging, and Labeling.....	48
8.1.1.1	Vedolizumab for Injection, for Intravenous Use (Vedolizumab IV)	48
8.1.1.2	Vedolizumab Injection, for Subcutaneous Use (Vedolizumab SC).....	48
8.1.1.3	Sponsor-Supplied Drug	49
8.1.1.4	Other Protocol-Specified Materials.....	49
8.1.2	Storage.....	49
8.1.3	Dose and Regimen	49
8.1.4	Overdose.....	50
8.2	Investigational Drug Assignment and Dispensing Procedures	50
8.3	Randomization Code Creation and Storage	51
8.4	Investigational Drug Blind Maintenance and Unblinding	52
8.5	Accountability and Destruction of Sponsor-Supplied Drugs.....	52
9.0	STUDY PLAN	54
9.1	Study Procedures	54
9.1.1	Informed Consent Procedure.....	54

9.1.1.1	Pharmacogenomic Informed Consent Procedure.....	54
9.1.2	Demographics, Medical History, and Medication History Procedure.....	54
9.1.3	Physical Examination Procedure	54
9.1.4	Weight and Height	55
9.1.5	Vital Sign Procedure.....	55
9.1.6	Primary Efficacy Measurement	55
9.1.6.1	Diary Completion and Review.....	55
9.1.7	Documentation of Concomitant Medications.....	56
9.1.8	Documentation of Concurrent Medical Conditions	56
9.1.9	Procedures for Clinical Laboratory Samples.....	56
9.1.10	Contraception and Pregnancy Avoidance Procedure.....	58
9.1.11	Pregnancy	59
9.1.12	ECG Procedure	59
9.1.13	Histological Sample Collection	60
9.1.14	Immunogenicity Sample Collection	60
9.1.15	Pharmacokinetic Sample Collection	60
9.1.16	Pharmacogenomic Sample Collection	60
9.1.17	Tuberculosis Screening	61
9.1.18	Fecal Calprotectin Sample Collection.....	61
9.1.19	Stool Sample.....	62
9.1.20	PML Checklist.....	62
9.1.21	Patient-Reported Outcomes Instruments.....	62
9.1.21.1	Inflammatory Bowel Disease Questionnaire.....	62
9.1.21.2	EQ-5D Questionnaire.....	62
9.1.21.3	Work Productivity and Activity Impairment-UC.....	63
9.1.22	Documentation of Screen Failure	63
9.1.23	Documentation of Study Entrance	63
9.2	Monitoring Subject Treatment Compliance.....	64
9.3	Schedule of Observations and Procedures	64
9.3.1	Screening.....	64
9.3.2	Enrollment/Randomization.....	64
9.3.2.1	Non-responders.....	65
9.3.3	Final Visit or Early Termination.....	65
9.3.4	Final Safety Follow-up Visit	65
9.3.5	Post Study 6-Month Long-Term Follow-Up Survey	65

9.3.6	Unscheduled Visits Due to Disease Exacerbation.....	65
9.4	Biological Sample Retention and Destruction	66
10.0	PRETREATMENT EVENTS (PTE), ADVERSE EVENTS (AE) AND PRODUCT COMPLAINTS (PC)	67
10.1	Definitions.....	67
10.1.1	PTEs.....	67
10.1.2	AEs.....	67
10.1.3	Additional Points to Consider for PTEs and AEs.....	67
10.1.4	SAEs.....	69
10.1.5	Special Interest AEs.....	70
10.1.6	Severity of PTEs and AEs	70
10.1.7	Causality of AEs	71
10.1.8	Relationship to Study Procedures.....	71
10.1.9	Start Date.....	71
10.1.10	Stop Date	71
10.1.11	Frequency	71
10.1.12	Action Concerning Study Medication.....	71
10.1.13	Outcome.....	72
10.1.14	Product Complaints.....	72
10.2	Procedures.....	72
10.2.1	Collection and Reporting of AEs.....	72
10.2.1.1	PTE and AE Collection Period.....	72
10.2.1.2	PTE and AE Reporting	73
10.2.1.3	Adverse Event Collection Involving Medically Anticipated Clinical Events.....	74
10.2.1.4	Special Interest AE Reporting.....	74
10.2.2	Collection and Reporting of SAEs.....	75
10.2.3	Reporting of Abnormal Liver Function Tests	76
10.3	Follow-up of SAEs	76
10.3.1	Safety Reporting to Investigators, IRBs or IECs, and Regulatory Authorities	76
11.0	STUDY-SPECIFIC COMMITTEES	78
11.1	Data Safety Monitoring Board	78
11.2	Adjudication Committee.....	78
11.2.1	CCI [REDACTED]	78
12.0	DATA HANDLING AND RECORD KEEPING.....	80

12.1	Electronic CRFs.....	80
12.2	Record Retention	80
13.0	STATISTICAL METHODS	82
13.1	Statistical and Analytical Plans	82
13.1.1	Analysis Sets.....	82
13.1.2	Analysis of Demographics and Other Baseline Characteristics	82
13.1.3	Efficacy Analysis	82
13.1.4	Resource Utilization and Patient Reported Outcomes (PRO).....	83
13.1.5	Pharmacokinetic Analysis	83
13.1.6	Other Analysis	83
13.1.7	Safety Analysis	84
13.2	Interim Analysis and Criteria for Early Termination	85
13.3	Determination of Sample Size.....	85
14.0	QUALITY CONTROL AND QUALITY ASSURANCE.....	86
14.1	Study-Site Monitoring Visits	86
14.2	Protocol Deviations.....	86
14.3	Quality Assurance Audits and Regulatory Agency Inspections	87
15.0	ETHICAL ASPECTS OF THE STUDY	88
15.1	IRB and/or IEC Approval	88
15.2	Subject Information, Informed Consent, and Subject Authorization	89
15.3	Subject Confidentiality	90
15.4	Publication, Disclosure, and Clinical Trial Registration Policy.....	90
15.4.1	Publication and Disclosure	90
15.4.2	Clinical Trial Registration.....	91
15.4.3	Clinical Trial Results Disclosure	91
15.5	Insurance and Compensation for Injury.....	91
16.0	REFERENCES.....	92

LIST OF IN-TEXT TABLES

Table 4.a	Efficacy of Vedolizumab IV in Subjects With UC During the Induction Phase (Week 6, C13006).....	22
Table 4.b	Efficacy of Vedolizumab IV in Subjects With UC During the Maintenance Phase (Week 52, C13006).....	23
Table 7.a	Eligibility for Study MLN0002SC-3030 Based on Reason for Withdrawal.....	47
Table 8.a	Dose and Dosing Regimen	50

Table 9.a	Clinical Laboratory Tests	57
Table 10.a	Takeda Medically Significant AE List.....	70

LIST OF IN-TEXT FIGURES

Figure 6.a	Schematic of Study Design	35
------------	---------------------------------	----

LIST OF APPENDICES

Appendix A	Schedule of Study Procedures: Screening, Induction and Non-Responders.....	95
Appendix B	Responsibilities of the Investigator.....	101
Appendix C	Elements of the Subject Informed Consent.....	103
Appendix D	Investigator Consent to Use of Personal Information.....	106
Appendix E	Collection, Shipment, and Storage of Pharmacogenomic Samples.....	107
Appendix F	Mayo Scoring System for the Assessment of Ulcerative Colitis Activity	108
Appendix G	Detailed Description of Amendments to Text.....	109

2.0 STUDY SUMMARY

Name of Sponsor(s): Takeda Development Center Americas, Inc. Takeda Development Centre Europe, Ltd. Takeda Development Center Asia, Pte. Ltd. Takeda Pharmaceutical Company, Ltd.	Compound: Vedolizumab SC	
Title of Protocol: A Phase 3, Randomized, Double-Blind, Placebo-Controlled Study, With a Vedolizumab IV Reference Arm, to Evaluate the Efficacy and Safety of Vedolizumab Subcutaneous as Maintenance Therapy in Subjects With Moderately to Severely Active Ulcerative Colitis Who Achieved Clinical Response Following Open-Label Vedolizumab Intravenous Therapy	IND No.: 118980	EudraCT No.: 2015-000480-14
Study Number: MLN0002SC-3027	Phase: 3	
Study Design: This is a pivotal, phase 3, multicenter, multinational, randomized, double-blind, double-dummy, placebo-controlled trial, including a vedolizumab intravenous (vedolizumab IV) reference arm, designed to evaluate the efficacy and safety of maintenance treatment with vedolizumab subcutaneous (vedolizumab SC) in adult subjects with moderately to severely active ulcerative colitis (UC) who achieved a clinical response at Week 6 following open-label therapy with 300 mg vedolizumab IV administered at Weeks 0 and 2. The study includes a vedolizumab IV reference arm to allow for within study descriptive comparisons on efficacy, safety, and immunogenicity between the two vedolizumab presentations. Moderately to severely active UC is defined as a complete Mayo score of 6 to 12 points with endoscopic subscore of ≥ 2 . Subjects that are tumor necrosis factor-alpha (TNF- α) antagonist naïve or with TNF- α antagonist failure will be included, ensuring that approximately 50% of subjects with TNF- α antagonist failure are enrolled. Subjects with previous use of TNF- α antagonist but not failed will NOT be enrolled.		
Primary Objectives: <ul style="list-style-type: none"> To assess the effect of vedolizumab SC maintenance treatment on clinical remission at Week 52 in subjects with moderately to severely active UC who achieved clinical response at Week 6 following administration of vedolizumab IV at Weeks 0 and 2. 		
Secondary Objectives: <ul style="list-style-type: none"> To determine the effect of vedolizumab SC maintenance treatment on mucosal healing at Week 52 in subjects who achieved clinical response at Week 6 following administration of vedolizumab IV at Weeks 0 and 2. To determine the effect of vedolizumab SC maintenance treatment on durable clinical response at Week 52 in subjects who achieved clinical response at Week 6 following administration of vedolizumab IV at Weeks 0 and 2. To determine the effect of vedolizumab SC maintenance treatment on durable clinical remission at Week 52 in subjects who achieved clinical response at Week 6 following administration of vedolizumab IV at Weeks 0 and 2. To determine the effect of vedolizumab SC maintenance treatment on corticosteroid free remission at Week 52 in subjects who achieved clinical response at Week 6 following administration of vedolizumab IV at Weeks 0 and 2. 		
Subject Population: Adult subjects with UC, aged 18-80 years inclusive.		
Number of Subjects: Approximately 400 subjects enrolled to enable approximately 188 subjects to be randomized for maintenance treatment.	Number of Sites: Approximately 250 sites globally.	

<p>Dose Level(s): Vedolizumab SC, 108 mg Vedolizumab IV, 300 mg</p>	<p>Route of Administration: Subcutaneous Intravenous</p>
<p>Duration of Treatment: 52-week treatment period</p>	<p>Period of Evaluation: The study includes a 4-week (28-day) Screening Period, a 6-week open-label vedolizumab IV Induction Phase, a 46-week randomized, double-blind, double-dummy, placebo-controlled Maintenance Phase with vedolizumab SC or vedolizumab IV with a final visit at Week 52. Subjects who do not participate in the open-label extension (OLE) study will be required to participate in a Final Safety Visit 18-weeks after the last study drug dose (Week 50 or early termination [ET]) and a long-term follow-up (LTFU) safety survey by telephone, 6 months after the last dose of study drug.</p>
<p>Main Criteria for Inclusion: The subject has a diagnosis of UC established at least 6 months prior to screening, by clinical and endoscopic evidence and corroborated by a histopathology report. The subject has moderately to severely active UC as determined by a complete Mayo score of 6-12 with an endoscopic subscore ≥ 2 within 10 days prior to the first dose of study drug. The subject has evidence of UC extending proximal to the rectum (≥ 15 cm of involved colon). The subject has demonstrated an inadequate response to, loss of response to, or intolerance of at least 1 of the following agents: immunomodulators, corticosteroids, or TNF-α antagonists.</p>	
<p>Main Criteria for Exclusion: The subject has had extensive colonic resection, subtotal or total colectomy. The subject has any evidence of an active infection during screening. The subject has a positive progressive multifocal leukoencephalopathy (PML) subjective checklist at Screening (or at Week 0 before the administration of study drug). The subject has received any investigational or approved biologic or biosimilar within 60 days or 5 half-lives of screening, whichever is longer. The subject has had prior exposure to vedolizumab. The subject has had prior exposure to natalizumab, efalizumab, or rituximab.</p>	
<p>Main Criteria for Evaluation and Analyses: The primary endpoint for this study is the proportion of subjects with clinical remission, defined as a complete Mayo score of ≤ 2 points and no individual subscore > 1 point, at Week 52. Secondary endpoints for this study are:</p> <ul style="list-style-type: none"> • Proportion of subjects with mucosal healing (defined as Mayo endoscopic subscore of ≤ 1 point) at Week 52. • Proportion of subjects with durable clinical response (defined as clinical response at Weeks 6 and 52, where 	

clinical response is defined as a reduction in complete Mayo score of ≥ 3 points and $\geq 30\%$ from Baseline (Week 0) with an accompanying decrease in rectal bleeding subscore of ≥ 1 point or absolute rectal bleeding subscore of ≤ 1 point).

- Proportion of subjects with durable clinical remission (defined as clinical remission at Weeks 6 and 52).
- Proportion of subjects with corticosteroid-free remission (defined as subjects using oral corticosteroids at Baseline (Week 0) who have discontinued oral corticosteroids and are in clinical remission at Week 52).

Statistical Considerations:

All statistical testing will be performed at 2-sided 0.05 level of significance. To control the overall Type I error rate for the comparison between vedolizumab SC and placebo groups for the primary and secondary endpoints, the statistical inference for the first secondary endpoint will only be performed if the primary endpoint is statistically significant and so on for each subsequent secondary endpoint.

All dichotomous efficacy endpoints will be analyzed using Cochran-Mantel-Haenszel tests for risk differences, stratified by randomization stratum. All subjects with missing data for determination of endpoint status will be considered as a nonresponder in the analysis.

Sample Size Justification:

Assuming a clinical remission rate of 42% for vedolizumab and 16% for placebo at Week 52, a sample size of 94 subjects in the vedolizumab SC group, 47 subjects in the placebo group will provide 90% power at 2-sided 0.05 level of significance. To ensure a randomized sample size of 188 subjects, assuming 47% of the subjects entering induction will achieve clinical response at Week 6, approximately 400 subjects will need to be enrolled into the study.

3.0 STUDY REFERENCE INFORMATION

3.1 Study-Related Responsibilities

The sponsor will perform all study-related activities with the exception of those identified in the Study-Related Responsibilities template. The identified vendors in the template for specific study-related activities will perform these activities in full or in partnership with the sponsor.

3.2 Principal Investigator/Coordinating Investigator

Takeda will select a Signatory Coordinating Investigator from the investigators who participate in the study. Selection criteria for this investigator will include significant knowledge of the study protocol, the study medication, their expertise in the therapeutic area and the conduct of clinical research as well as study participation. The Signatory Coordinating Investigator will be required to review and sign the clinical study report and by doing so agrees that it accurately describes the results of the study.

3.3 List of Abbreviations

Term	Definition
5-ASA	5-aminosalicylate
AE	adverse event
AESI	adverse event of special interest
ALT	alanine aminotransferase
AST	aspartate aminotransferase
AVA	anti-vedolizumab antibody; also called HAHA
$C_{av,ss}$	average serum concentration over the dosing interval at steady state
CD	Crohn's disease
C_{max}	maximum observed serum concentration
$C_{max,ss}$	maximum observed serum concentration at steady-state
CRO	contract research organization
C_{trough}	trough serum concentration levels
DNA	deoxyribonucleic acid
DSMB	data safety monitoring board
ECG	electrocardiogram
ECL	electrochemiluminescence
eCRF	electronic case report form
ELISA	enzyme-linked immunosorbent assay
EMA	European Medicines Agency
EQ-5D	Euro Quality of Life-5D
ET	early termination
EU	European Union
FAS	full analysis set
FDA	Food and Drug Administration
FSH	follicle-stimulating hormone
GALT	gut-associated lymphoid tissue
GCAP	granulocytapheresis
GCP	Good Clinical Practice
GI	gastrointestinal(ly)
HBsAg	hepatitis B surface antigen
HBV	hepatitis B virus
hCG	human chorionic gonadotropin
HCP	healthcare provider
HCV	hepatitis C virus
HIV	human immunodeficiency virus
HRQOL	health-related quality of life
IAC	Independent Adjudication Committee
IB	Investigator's Brochure

CONFIDENTIAL

Term	Definition
IBD	inflammatory bowel disease
IBDQ	Inflammatory Bowel Disease Questionnaire
ICH	International Conference on Harmonisation
ID	identification
IEC	independent ethics committee
Ig	immunoglobulin
IM	intramuscular(ly)
INR	international normalized ratio
IRB	institutional review board
IV	intravenous(ly)
IWRS	interactive web response system
JCV	John Cunningham virus
LCAP	leukocytapheresis
LFT	liver function test
mAb	monoclonal antibody
MAdCAM-1	mucosal addressin cell adhesion molecule-1
MedDRA	Medical Dictionary for Regulatory Activities
NSAID	nonsteroidal anti-inflammatory drug
OLE	open-label extension
PVC	polyvinyl chloride
PD	pharmacodynamic(s)
PGx	pharmacogenomics
PK	pharmacokinetic(s)
PML	progressive multifocal leukoencephalopathy
PP	per-protocol
PRO	patient-reported outcome
PTE	pretreatment event
Q2W	once every 2 weeks
Q4W	once every 4 weeks
Q8W	once every 8 weeks
QOL	quality of life
RAMP	Risk Assessment and Management Program for PML
RNA	ribonucleic acid
SAE	serious adverse event
SAP	statistical analysis plan
SC	subcutaneous(ly)
SUSAR	suspected unexpected serious adverse reaction
TB	tuberculosis
TEAE	treatment-emergent adverse event

Term	Definition
t_{\max}	time to reach C _{max}
TPMT	thiopurine S-methyltransferase
TNF- α	tumor necrosis factor- alpha
UC	ulcerative colitis
ULN	upper limit of normal
US	United States
USPI	United States Package Insert
VAS	visual analog scale
WBC	white blood cell
WHODRUG	World Health Organization Drug Dictionary
WPAI	Work Productivity and Activity Impairment

3.4 Corporate Identification

TDC Japan	Takeda Development Center Japan
TDC Asia	Takeda Development Center Asia, Pte Ltd
TDC Europe	Takeda Development Centre Europe Ltd.
TDC Americas	Takeda Development Center Americas, Inc.
TDC	TDC Japan, TDC Asia, TDC Europe and/or TDC Americas, as applicable
Takeda	TDC Japan, TDC Asia, TDC Europe and/or TDC Americas, as applicable

3.5 Study Definitions

Term	Definition
Clinical remission by complete Mayo score	A complete Mayo score of ≤ 2 points and no individual subscore > 1 point.
Clinical response	A reduction in complete Mayo score of ≥ 3 points and $\geq 30\%$ from Baseline (Week 0) (or partial Mayo score of ≥ 2 points and $\geq 25\%$ from Baseline, if the complete Mayo score was not performed at the visit) with an accompanying decrease in rectal bleeding subscore of ≥ 1 point or absolute rectal bleeding subscore of ≤ 1 point.
Corticosteroid-free remission	Defined as subjects using oral corticosteroids at Baseline (Week 0) who have discontinued oral corticosteroids and are in clinical remission at Week 52.
Disease worsening	An increase in partial Mayo score ≥ 3 points from the Week 6 value on 2 consecutive visits (or an increase to 9 points on 2 consecutive visits if the Week 6 value > 6) and a minimum partial Mayo score of ≥ 5 points.
Durable clinical remission	Clinical remission at Weeks 6 and 52.
Durable clinical response	Clinical response at Weeks 6 and 52.
Mucosal healing	A Mayo endoscopic subscore of ≤ 1 point.
Treatment failure	Defined as disease worsening, need for rescue medications (as defined in Section 7.3.1), or need for surgical intervention for treatment of ulcerative colitis.

4.0 INTRODUCTION

4.1 Background

4.1.1 Diseases and Current Treatments

Inflammatory bowel disease (IBD) is a chronic, relapsing, inflammatory disorder of the gastrointestinal (GI) tract that includes 2 entities, namely ulcerative colitis (UC) and Crohn's disease (CD).

UC is characterized by diffuse, superficial inflammation of the colonic mucosa that begins in the rectum and extends proximally to involve any contiguous length of colon. The prevalence of UC is approximately 200/100,000 of the United States population and approximately 150/100,000 of the population in Western Europe [1-3] and 63.6/100,000 of the population in Japan [4]. A genetic contribution to the disease is indicated by the increased incidence of UC (of 30 to 100 times that of the general population) among first-degree relatives of patients with UC. The characteristic pathology is one of chronic inflammation characterized by large numbers of lymphocytes and histiocytes in the diseased mucosa and submucosa with an acute inflammatory infiltrate composed of neutrophils variably present.

Clinical manifestations of UC include diarrhea, typically bloody, as well as abdominal pain, fecal urgency, and incontinence. Systemic features such as fever, weight loss, malaise, and fatigue are indicators of more extensive disease. Extra-intestinal manifestations such as uveitis, arthritis, ankylosis spondylitis, or primary sclerosing cholangitis may also be seen in conjunction with IBD. The diagnosis of UC is usually made by the clinical presentation and key features of the history, physical examination, in combination with laboratory and imaging studies.

Current treatments have been effective for many patients with UC but have numerous limitations for patients with moderately to severely active disease. 5-aminosalicylates (5-ASAs) are the mainstay of UC pharmacotherapy for induction and maintenance of remission for patients with mild to moderate disease, but are less effective in moderate to severe disease. [5,6].

Corticosteroids are often required for the 1/3 of patients who fail to respond to 5-ASAs [7,8]. While highly effective for induction of remission, corticosteroids are not recommended for maintenance of remission and carry significant undesirable side effects, including osteoporosis, glucose intolerance, and increased risk of infection.

Immunomodulatory agents, including 6-mercaptopurine and azathioprine, have a role in maintenance of remission in moderately to severely active UC. Their relatively slow onset of action precludes their use during flares of disease, and the use of these agents has been reported to potentially increase the risk of lymphoma in patients with IBD [9]. Other severe adverse events (AEs) associated with use of immunomodulators include cytopenias, hepatitis, and infection.

Intravenous (IV) cyclosporine has a role in the management of severely active UC; however, it is impractical in non-hospitalized patients, requires intense monitoring, and may cause irreversible nephrotoxicity, all of which limit its use.

Monoclonal antibodies (mAbs) directed against tumor necrosis factor-alpha (TNF- α) have been approved for the treatment of UC in many countries world-wide, including infliximab (Remicade), which is administered by IV infusion, and adalimumab (Humira) and golimumab (Simponi), which are administered by subcutaneous (SC) injection [10-12]. These agents have substantially improved the care of patients with UC by inducing and maintaining remission and decreasing the need for hospitalizations and surgeries, and other complications. Although TNF- α antagonists represent an important addition to the UC pharmacologic armamentarium, they are effective in only a subset of patients, with roughly 2/3 of patients in controlled trials not in remission at the end of the first year of therapy [13,14]. Induction of remission with infliximab occurs in only 31% to 39% of patients with UC [15] and durable clinical remission (ie, defined as clinical remission at Weeks 8, 30, and 54) occurs in only 26% of patients with UC. In addition, controlled studies have demonstrated that, after failure of 1 TNF- α antagonist, a patient's response to a second TNF- α antagonist is substantially lower [16]. The TNF- α antagonists are also associated with a number of serious safety concerns based on their suppression of systemic immunity, including reactivation of tuberculosis (TB); various bacterial, viral, fungal, and opportunistic infections; and malignancies, such as hepatosplenic T cell lymphoma [10,11].

Failure of pharmacological therapy leads to colectomy in 9% to 35% of patients with UC within 5 years. Colectomy is considered to be an important adjunct treatment for refractory UC; however, colectomy with ileal pouch anal anastomosis (the standard surgical therapy) has many limitations and is associated with its own set of complications, including high stool frequency [17], female infertility [18], and a cumulative incidence of pouchitis of 50% at 10 years [19]. The limitations of current therapies for UC indicate that there is a significant need for safer and more effective therapies.

4.1.2 Vedolizumab

Vedolizumab (also known as MLN0002) is a novel recombinant humanized mAb composed of 2 light chains of the κ subclass and 2 immunoglobulin (Ig) G1 heavy chains. Vedolizumab binds specifically to the human lymphocyte integrin $\alpha_4\beta_7$. The $\alpha_4\beta_7$ integrin mediates lymphocyte trafficking to GI mucosa and gut-associated lymphoid tissue (GALT) through adhesive interaction with mucosal addressin cell adhesion molecule-1 (MAdCAM-1), which is expressed on the endothelium of mesenteric lymph nodes and GI mucosa [20-23]. As a result, vedolizumab impairs the migration of gut-homing leukocytes into GI mucosa [24] and acts as a gut-selective immunomodulator.

Vedolizumab IV (also known as ENTYVIO; KYNTELES; Vedolizumab for Injection, for Intravenous Use; Vedolizumab Powder for Concentrate for Solution for Infusion; or MLN0002 IV) has been granted marketing approval in several regions, including the United States (US) and European Union (EU). Vedolizumab IV is approved for the treatment of adult patients with moderately to severely active UC and CD, who have failed conventional treatment, such as immunomodulators, corticosteroids, or TNF- α antagonists. The approved dosing and administration regimen is 300 mg vedolizumab IV infused intravenously at Weeks 0 and 2, then once every 8 weeks (Q8W) thereafter, beginning at Week 6.

Vedolizumab SC (also known as Vedolizumab Injection, for Subcutaneous Use; Vedolizumab Solution for Injection in Pre-filled Syringe; or MLN0002 SC) is a new liquid presentation that has been developed for SC administration. CCI

Therefore, the nonclinical and clinical information from studies with vedolizumab IV are considered relevant.

As of 19 May 2015 (data lock point), more than 3600 subjects have received at least 1 dose of vedolizumab across all studies in the clinical development program. Phase 3 placebo-controlled studies enrolled 2427 subjects with UC or CD, of whom 1434 subjects were administered 300 mg of vedolizumab IV for induction followed by once every 4 weeks (Q4W) or Q8W for up to a total of 52 weeks and 488 subjects were administered 300 mg vedolizumab for induction only [25-27]. As of 19 May 2015, vedolizumab exposure has extended for ≥ 12 months in 1667 subjects, ≥ 24 months in 1306 subjects, ≥ 36 months in 935 subjects, ≥ 48 months in 676 subjects, ≥ 60 months in 267 subjects, and ≥ 72 months in 26 subjects. Based on the most recent drug shipment data (19 November 2015), the cumulative patient exposure to vedolizumab since its marketing approval in May 2014 is estimated to be approximately 25,831 patient-years.

Previously conducted clinical studies have characterized the efficacy, safety, tolerability, pharmacokinetic (PK), pharmacodynamic (PD), and immunogenicity of vedolizumab in healthy subjects and subjects with UC or CD. Please refer to the current edition of the Investigator's Brochure (IB) for the most recent data for vedolizumab.

4.1.2.1 Nonclinical

Nonclinical in vitro and in vivo studies have been conducted with vedolizumab and its murine homologue, Act-1. Act-1 has demonstrated clinical and histomorphologic evidence of efficacy in an animal model of IBD (cotton-top tamarins). Extensive nonclinical evaluations of the cardiovascular, acute, local, subchronic, chronic, immunologic, and reproductive toxicity of vedolizumab in pharmacologically responsive species (New Zealand white rabbits and cynomolgus monkeys) have been conducted and support its clinical development. Nonclinical studies also show that vedolizumab does not antagonize $\alpha_4\beta_1$ integrin [24].

A single-dose local tolerance study was conducted to determine the local irritancy potential of vedolizumab SC when administered by SC injection to rabbits. Macroscopic and histological examinations of the injection sites indicated no findings of concern with the vehicle or formulated vedolizumab SC.

4.1.2.2 Clinical Experience With Vedolizumab IV

Single- and multiple-dose PK of vedolizumab have been studied in healthy subjects and in subjects with moderately to severely active UC or CD and similar PK was observed. Vedolizumab exhibits

target-mediated drug disposition; hence, its elimination is characterized by linear and nonlinear processes. Following IV infusion, vedolizumab serum concentrations generally fell in a biexponential fashion until approximately 1 to 10 µg/mL, with a linear total body clearance of approximately 0.157 L/day and a serum half-life of around 25 days. Thereafter, the serum concentrations fell in a nonlinear fashion. The volume of distribution for vedolizumab is approximately 5 L.

In subjects with moderately to severely active UC (C13006), vedolizumab IV 300 mg administered as an IV infusion at Weeks 0 and 2 (induction) followed by either Q4W or Q8W administration from Week 6 through Week 52 (maintenance) induced a statistically-significant increase in rates of clinical response at Week 6 and clinical remission at Week 52 (primary endpoint for the Induction Phase and Maintenance Phase, respectively) compared with placebo. The study also met important secondary endpoints, including durable clinical response, durable clinical remission, and mucosal healing at Weeks 6 and 52, and corticosteroid-free clinical remission at Week 52 (Table 4.a and Table 4.b). Given the significant morbidity associated with chronic corticosteroid treatment, the corticosteroid-sparing effects of vedolizumab provide an important benefit to patients with UC.

Table 4.a Efficacy of Vedolizumab IV in Subjects With UC During the Induction Phase (Week 6, C13006)

Endpoint	PBO N=149	VDZ N=225	Difference	p-value
Primary endpoint				
Clinical response (%)	25.5	47.1	21.7	<0.0001
Secondary endpoints				
Clinical remissions (%)	5.4	16.9	11.5	0.0009
Mucosal healing (%)	24.8	40.9	16.1	0.0012

Source: C13006 Clinical Study Report.
PBO=placebo, VDZ=vedolizumab.

Table 4.b Efficacy of Vedolizumab IV in Subjects With UC During the Maintenance Phase (Week 52, C13006)

Endpoint	PBO/VDZ	VDZ/VDZ	VDZ/VDZ	Difference	
	(a) N=126	Q8W N=122	Q4W N= 25	Q8W vs PBO/VDZ	Q4W vs PBO/VDZ
Primary endpoint					
Clinical remission at 52 wks (%)	15.9	41.8	44.8	26.1	<0.0001
				29.1	<0.0001
Secondary endpoints					
Durable clinical response (6 wks and 52 wks) (%)	23.8	56.6	52.0	32.8	<0.0001
				28.5	<0.0001
Mucosal healing at 52 wks (%)	19.8	51.6	56.0	32.0	<0.0001
				36.3	<0.0001
Durable clinical remission (6 wks and 52 wks) (%)	8.7	20.5	24.0	11.8	0.0079
				15.3	0.0009
Corticosteroid-free remission (b) at 52 wks (%)	N=72 13.9	N=70 31.4	N=73 45.2	17.6	0.0120
				31.4	<0.0001

Source: C13006 Clinical Study Report

PBO=placebo, VDZ=vedolizumab.

(a) This group includes those subjects who received vedolizumab at Weeks 0 and 2, and were randomized to receive placebo from Week 6 through Week 52.

(b) Corticosteroid-free remission was analyzed in subjects on oral corticosteroids at Baseline.

Vedolizumab has shown an acceptable safety profile based on an analysis of safety data from both completed and ongoing studies (see current edition of IB). In phase 1 and 2 clinical trials (7 completed phase 1 studies in healthy subjects and 8 completed phase 1b/2 studies in UC or CD subjects), there was no consistent evidence of any dose-toxicity relationships, and vedolizumab was well-tolerated. The majority of the safety data is from 3 well-controlled, phase 3 clinical studies that evaluated the safety of vedolizumab IV for up to 12 months in subjects with UC (Study C13006 [52 weeks]) or CD (Studies C13007 [52 weeks] and C13011 [10 weeks]). In addition, an interim safety assessment is available for an ongoing long-term open-label extension (OLE) study (C13008), in which subjects are administered vedolizumab IV Q4W.

In the pivotal phase 3 studies (C13006 and C13007), the most common ($\geq 5\%$ and at a higher incidence than placebo) adverse reactions in subjects administered vedolizumab IV were nausea, nasopharyngitis, upper respiratory tract infection, arthralgia, pyrexia, fatigue, headache, and cough. Most serious adverse events (SAEs) have been related to exacerbations or complications of the underlying UC or CD. For those infections that were reported more frequently in vedolizumab-treated subjects, the sites of these infections correlated with the known tissue distribution of MAdCAM-1 binding sites. Anal abscess, abdominal abscess, and gastroenteritis were the most frequently reported serious infections. Extraintestinal infections (bronchitis, pneumonia, urinary tract infection, sepsis) occurred at low frequency ($<1\%$). A total of 4% of vedolizumab-treated subjects and 3% of placebo-treated subjects experienced an infusion-related reaction. In Studies C13006 and C13007, 10% of subjects were positive for anti-vedolizumab

antibodies (AVA) 16 weeks following the last dose of vedolizumab. Results from the clinical program to date do not suggest an increased risk for malignancy with vedolizumab treatment. Overall, the safety profile following long-term treatment with vedolizumab IV in Study C13008 is consistent with safety in the completed studies.

Concomitant use of corticosteroids and/or conventional immunomodulators did not appear to be associated with any increased rate of infections based on the comparative rates of infections in the phase 3 trials among subjects who had and had not received these medications.

One death occurred in a vedolizumab-treated subject during Study C13006 and 5 deaths occurred during Study C13007, including 1 death in a placebo-treated subject. As of 19 May 2015, a total of 26 deaths from multiple causes were reported in the vedolizumab clinical development program, including the ongoing long-term Study C13008. Twenty-five of the 26 subjects were randomized to the vedolizumab treatment group. Of these deaths, 14 occurred within 18 weeks of the last dose of study drug in phase 3 clinical studies and 11 occurred more than 18 weeks after the last dose of vedolizumab was administered. The causes of death varied and detailed information can be found in the current edition of the IB.

Overall, vedolizumab was well tolerated in clinical studies.

4.1.2.3 Clinical Experience With Vedolizumab SC

The feasibility of administering the vedolizumab IV formulation by alternative dosing routes SC or intramuscular (IM) injection was explored in an open-label, single dose, parallel-group bioavailability study (C13010) in healthy male subjects. In this study, 42 subjects were enrolled and 14 subjects each received a single dose of 180 mg vedolizumab IV as IV infusion (over 30 minutes), SC injections ($2 \times 1.5 \text{ mL} \times 60 \text{ mg/mL}$), or IM injections ($2 \times 1.5 \text{ mL} \times 60 \text{ mg/mL}$). Following SC administration, absorption of vedolizumab was gradual, achieving maximum concentration at 7 days post-injection (time to reach maximum serum concentration [t_{max}]). The maximum observed serum concentration (C_{max}) following SC injection was approximately 1/3 of the C_{max} following 30 minute IV infusion. There was no difference in the terminal elimination profile of the SC cohort compared to the IV cohort, indicating that the elimination of vedolizumab is not absorption rate-limited. The absolute bioavailability of vedolizumab was approximately 75% for SC administration. Vedolizumab was well tolerated when administered at a dose of 180 mg by SC injection. Five of the 14 subjects (36%) in the IV infusion cohort and 3 of the 14 subjects (21%) in the SC cohort experienced a drug-related AE (assessed by the investigator). Most AEs were mild or moderate in severity. Three of the 14 subjects (21%) in the IV infusion cohort and 2 of the 14 subjects (14%) in the SC cohort in this study were AVA positive using the originally developed AVA assay that was used in the phase 3 studies with vedolizumab IV. While all 3 AVA positive subjects in the IV infusion cohort had neutralizing AVA, no neutralizing AVA was observed in the SC cohort.

The bioavailability and PK of vedolizumab following a single SC injection of vedolizumab SC at 3 dose levels (54, 108, and 160 mg) relative to a single IV infusion of vedolizumab IV 300 mg was examined in a phase 1, open-label study (MLN0002SC-101). Forty-eight (24 Japanese and

24 non-Japanese) healthy, adult male and female subjects were randomized, A total of 12 subjects received a single dose of vedolizumab IV 300 mg and 36 subjects received a single dose of vedolizumab SC at 54, 108, or 160 mg (12 subjects per dose group).

The bioavailability following a single SC injection of vedolizumab SC was 75.1%, independent of the vedolizumab SC dose evaluated (54, 108, or 160 mg). Vedolizumab reached maximum serum concentrations around 1 week after a single SC injection. Vedolizumab was eliminated by both linear and nonlinear pathways following SC injection, with more rapid elimination with decreasing dose/concentration. Compared with non-Japanese subjects, Japanese subjects generally showed similar or slightly higher exposure; however, ethnicity did not have an impact on clearance or central volume of distribution based on the population PK analysis, likely due to the fact that weight was included as a covariate for various population PK parameters. Simulations further confirmed that vedolizumab SC at 108 mg every 2 weeks (Q2W) is expected to provide lower trough concentrations at steady state than vedolizumab IV 300 mg Q4W and similar steady-state exposures (average serum concentration at steady state [$C_{av,ss}$]) to that from the approved vedolizumab IV 300 mg Q8W maintenance regimen.

An electrochemiluminescence (ECL) assay has been developed to determine serum titers of AVA. This assay has improved drug tolerance as compared to the prior enzyme-linked immunosorbent assay (ELISA) method used in the vedolizumab clinical development program and, as a result, is more sensitive. Both assays were used in Study MLN0002SC-101; the ECL assay data were used in the analysis of PK and safety.

CCI



Overall, 75.0% (36/48) of subjects had treatment-emergent adverse events (TEAEs), and the percentage of subjects with a TEAE was identical in subjects who received vedolizumab SC compared with subjects who received vedolizumab IV. All TEAEs were considered by the investigator to be mild or moderate in intensity; no TEAEs of severe intensity were reported. The percentage of subjects with mild or moderate TEAEs was similar between subjects who received vedolizumab SC and vedolizumab IV; the percentages were also similar across the dose groups. No subjects had clinical laboratory test results, vital signs, or electrocardiogram (ECG) results that were reported as AEs. Two subjects had elevated bilirubin levels that met the predefined markedly abnormal value criteria; however, no subject had abnormal liver function test (LFT) results involving aspartate aminotransferase (AST) or alanine aminotransferase (ALT).

Two AEs of special interest were reported: 1 subject in the vedolizumab SC 108 mg group experienced erythema at the injection site on the left thigh, and 1 subject in the vedolizumab SC

160 mg group experienced an injection site reaction. Both events occurred on Day 1, and were observed at the 30 minute postdose observation time point (a protocol-defined time point). In each case, the event resolved at the 1.5 hour postdose observation time point and was considered by the investigator to be mild in intensity and related to study drug. Both subjects recovered without any sequelae.

CCI



No SAEs, severe AEs, or deaths were reported in Study MLN00002SC-101. The observed AEs are consistent with the overall safety profile of vedolizumab.

4.2 Rationale for the Proposed Study

As IV infusion may not be convenient as long-term therapy for some patients, vedolizumab SC has been developed to enable injection by patients or their caregivers.

This phase 3 study is designed to evaluate the efficacy, safety, PK, and immunogenicity of multiple injections of the new presentation, vedolizumab SC, as maintenance therapy in subjects with UC.

CCI




Therefore, all nonclinical and clinical information from studies with vedolizumab IV is considered relevant.

The vedolizumab exposure-efficacy relationship has been demonstrated in UC subjects in the phase 3 vedolizumab IV study (C13006), where higher serum vedolizumab concentrations were associated with higher efficacy (Source: Population PK Efficacy Report 2013). The proposed vedolizumab SC maintenance dosing regimen (108 mg Q2W) was selected to provide lower steady-state trough concentrations than the vedolizumab IV Q4W dosing regimen and similar Cavg steady-state exposures to that from the approved vedolizumab IV Q8W dosing regimen, and the safety and efficacy of the vedolizumab SC presentation are expected to be similar to those of vedolizumab IV, outside of expected local administration site events, such as injection-site reactions.

4.3 Benefit-Risk Assessment

The proposed study (MLN0002SC-3027) is designed to evaluate the efficacy and safety of vedolizumab SC as maintenance therapy in subjects with moderately to severely active UC who achieved clinical response following open-label vedolizumab IV therapy. Because IV infusion may not be convenient as long-term therapy, vedolizumab SC has been developed to ultimately enable injection by patients or their caregivers. CCI



CONFIDENTIAL

CCI

Therefore, the nonclinical and clinical information from studies with vedolizumab IV are considered relevant.

The study population in Study MLN0002SC-3027 is consistent with the approved vedolizumab IV label. The proposed vedolizumab SC maintenance dosing regimen (108 mg Q2W) was selected to provide similar steady-state exposure to that from the approved vedolizumab IV dosing regimen (300 mg Q8W). It is expected that similar steady-state exposure to vedolizumab will result in similar maintenance efficacy, independent of the dosing route or presentation. In addition, safety of the vedolizumab SC presentation is expected to be similar to that of vedolizumab IV due to similar exposure, outside of expected local administration site events, such as injection-site reactions. Results from a phase 1 study suggest that administration of vedolizumab SC (rather than IV) may result in higher immunogenicity; however, the clinical significance of these results is unclear, since this was a single-dose study in healthy subjects. The observed AEs with vedolizumab SC are consistent with the vedolizumab IV safety profile.

Overall, vedolizumab has been well tolerated in clinical studies, including a phase 1 study of vedolizumab SC, and has a positive benefit-risk profile in the treatment of UC.

5.0 STUDY OBJECTIVES AND ENDPOINTS

5.1 Objectives

5.1.1 Primary Objective(s)

- To assess the effect of vedolizumab SC maintenance treatment on clinical remission at Week 52 in subjects with moderately to severely active UC who achieved clinical response at Week 6 following administration of vedolizumab IV at Weeks 0 and 2.

5.1.2 Secondary Objectives

- To determine the effect of vedolizumab SC maintenance treatment on mucosal healing at Week 52 in subjects who achieved clinical response at Week 6 following administration of vedolizumab IV at Weeks 0 and 2.
- To determine the effect of vedolizumab SC maintenance treatment on durable clinical response at Week 52 in subjects who achieved clinical response at Week 6 following administration of vedolizumab IV at Weeks 0 and 2.
- To determine the effect of vedolizumab SC maintenance treatment on durable clinical remission at Week 52 in subjects who achieved clinical response at Week 6 following administration of vedolizumab IV at Weeks 0 and 2.
- To determine the effect of vedolizumab SC maintenance treatment on corticosteroid free remission at Week 52 in subjects who achieved clinical response at Week 6 following administration of vedolizumab IV at Weeks 0 and 2.

5.1.3 Exploratory Objectives

CCI



CCI



5.2 Endpoints

The endpoints pertain to the vedolizumab SC and placebo arms only.

5.2.1 Primary Endpoints

- Proportion of subjects with clinical remission, defined as a complete Mayo score of ≤ 2 points and no individual subscore > 1 point, at Week 52.

5.2.2 Secondary Endpoints

- Proportion of subjects with mucosal healing, defined as Mayo endoscopic subscore of ≤ 1 point, at Week 52.
- Proportion of subjects with durable clinical response, defined as clinical response at Weeks 6 and 52, where clinical response is defined as a reduction in complete Mayo score of ≥ 3 points and $\geq 30\%$ from Baseline (Week 0) with an accompanying decrease in rectal bleeding subscore of ≥ 1 point or absolute rectal bleeding subscore of ≤ 1 point.
- Proportion of subjects with durable clinical remission, defined as clinical remission at Weeks 6 and 52.

- Proportion of subjects with corticosteroid-free remission, defined as subjects using oral corticosteroids at Baseline (Week 0) who have discontinued oral corticosteroids and are in clinical remission at Week 52.

5.2.3 Patient Reported Outcome (PRO) Endpoints

- Changes in IBDQ total score and subscores, from Baseline (Week 0) to Week 52 and from Week 6 to Week 52.
- Changes in EQ-5D utility scores and EQ-5D VAS score from Baseline (Week 0) to Week 52 and Week 6 to Week 52.
- Changes in WPAI-UC instrument endpoints (% work time missed, % impairment while working, % overall work impairment, % activity impairment) from baseline (week 0) to Week 52 and Week 6 to Week 52.

5.2.4 Exploratory Endpoints

CCI



CCI



6.0 STUDY DESIGN AND DESCRIPTION

6.1 Study Design

This is a pivotal, phase 3, multicenter, multinational, randomized, double-blind, double-dummy, placebo-controlled trial, including a vedolizumab IV reference arm, designed to evaluate the efficacy and safety of maintenance treatment with vedolizumab SC in adult subjects with moderately to severely active UC who achieved a clinical response at Week 6 with open-label therapy with 300 mg vedolizumab IV at Weeks 0 and 2. The study includes a vedolizumab IV reference arm to allow for within study descriptive comparisons on efficacy, safety, and immunogenicity between the two vedolizumab presentations.

Moderately to severely active UC is defined as a complete Mayo score of 6 to 12 points with endoscopic subscore of ≥ 2 . Subjects that are either TNF- α antagonist naïve or with TNF- α antagonist failure will be included, ensuring that approximately 50% of subjects with TNF- α antagonist failure are enrolled. Subjects with previous use of TNF- α antagonist but not failed will NOT be enrolled.

The study includes a 4-week (28-day) Screening Period, a 6-week open-label vedolizumab IV Induction Phase, and a 46-week randomized, double-blind, double-dummy, placebo-controlled Maintenance Phase with vedolizumab SC or vedolizumab IV with a final visit at Week 52. All endoscopic assessments (ie, for disease severity at baseline and for clinical endpoints at the end of the Induction and Maintenance Phases) will be performed via central reading.

Eligible subjects, will be enrolled into the Induction Phase at Week 0, will receive open-label infusions of vedolizumab IV 300 mg at Weeks 0 and 2, and will be assessed for clinical response by full Mayo score (endoscopy score determined by central reading) at Week 6, as follows:

- Subjects who achieve a clinical response at Week 6 will be randomized into the Maintenance Phase. Upon completion of the Week 52 assessment or upon early discontinuation due to treatment failure (ie, disease worsening or need for rescue medications) these subjects will be eligible to enter the OLE study.
- Subjects who do not achieve a clinical response at Week 6 will not be randomized in to the Maintenance Phase, and instead will receive a third infusion of vedolizumab IV 300 mg at Week 6. Subjects who achieve a clinical response at Week 14 (by partial Mayo score) will be eligible to enroll in the OLE study, while subjects who do not achieve clinical response will be discontinued.

Subjects with clinical response at Week 6 will be randomized at a 2:1:1 ratio in the double-blind, double-dummy Maintenance Phase, where each treatment arm will receive both SC injections Q2W and IV infusions Q8W, beginning at Week 6 through Week 50, as follows:

- Injections of vedolizumab SC 108 mg Q2W and placebo IV infusions every 8 weeks (Q8W) (N=94).
- Infusions of vedolizumab IV 300 mg Q8W and placebo SC injections Q2W (N=47).

- Placebo SC injections Q2W and placebo IV infusions Q8W (N=47).

Randomization will be stratified by:

- Concomitant use of oral corticosteroids.
- Clinical remission status at Week 6.
- Previous TNF- α antagonists failure or concomitant immunomodulator (azathioprine or 6-mercaptopurine) use.

At Week 6, subjects receiving oral corticosteroids who achieved a clinical response and are randomized into the Maintenance Phase will begin a corticosteroid tapering regimen.

After receiving training from the health care provider (HCP; investigator or designee) on the proper SC injection technique and how to manage hypersensitivity reactions potentially associated with the injection, subjects or their caregivers will inject vedolizumab SC/placebo SC under the supervision of the HCP during at least the Week 6 and 8 clinic visits, to ensure proper injection technique prior to home dosing and to allow for direct observation by the HCP of any potential hypersensitivity or injection-site reactions associated with SC injection. Subjects and caregivers may attend the clinic at Weeks 10 and 12 if further training is required. Subjects or their caregivers will also administer SC injections during the scheduled clinic visits at Weeks 14, 22, 30, 38, 46, and 50 under the supervision of the HCP to allow continued observation of injection technique and AEs; while all other scheduled SC injections should occur outside of the clinic. All IV infusions will be administered by a HCP during clinic visits at Weeks 6, 14, 22, 30, 38, and 46. HCPs will have appropriate monitoring and treatment for hypersensitivity reactions available for use following administration of study drug. Subjects who experience a severe hypersensitivity reaction associated with study drug administration will be discontinued from the study (see Section 7.4).

Subjects and their caregivers will be instructed to inject SC doses into the thigh, abdomen, or upper arm, and to rotate the injection sites. Subjects and their caregivers will be instructed that the upper arm is to be used only when the caregiver administers the SC injection. Details on the training protocol and injection technique will be included in the appropriate Study Manual. For all SC dosing occurring outside of the clinic, subjects will receive a phone call from their HCP within 24 hours prior to every injection to administer the PML subjective checklist and enquire about general health status and experience with prior injections. In accordance with the Risk Assessment and Management Plan for PML (RAMP), any positive PML subjective finding must be evaluated via the physician administered PML objective checklist prior to the subject receiving the respective dose (refer to RAMP Site Staff Brochure). Subjects will also receive a phone call from their HCP within 12 hours after the home injection at Weeks 10 and 12 to enquire about health status and experience with injection unless they attended the clinic on these days. AEs reported by the subject will be handled in accordance with Section 10.0 of the protocol.

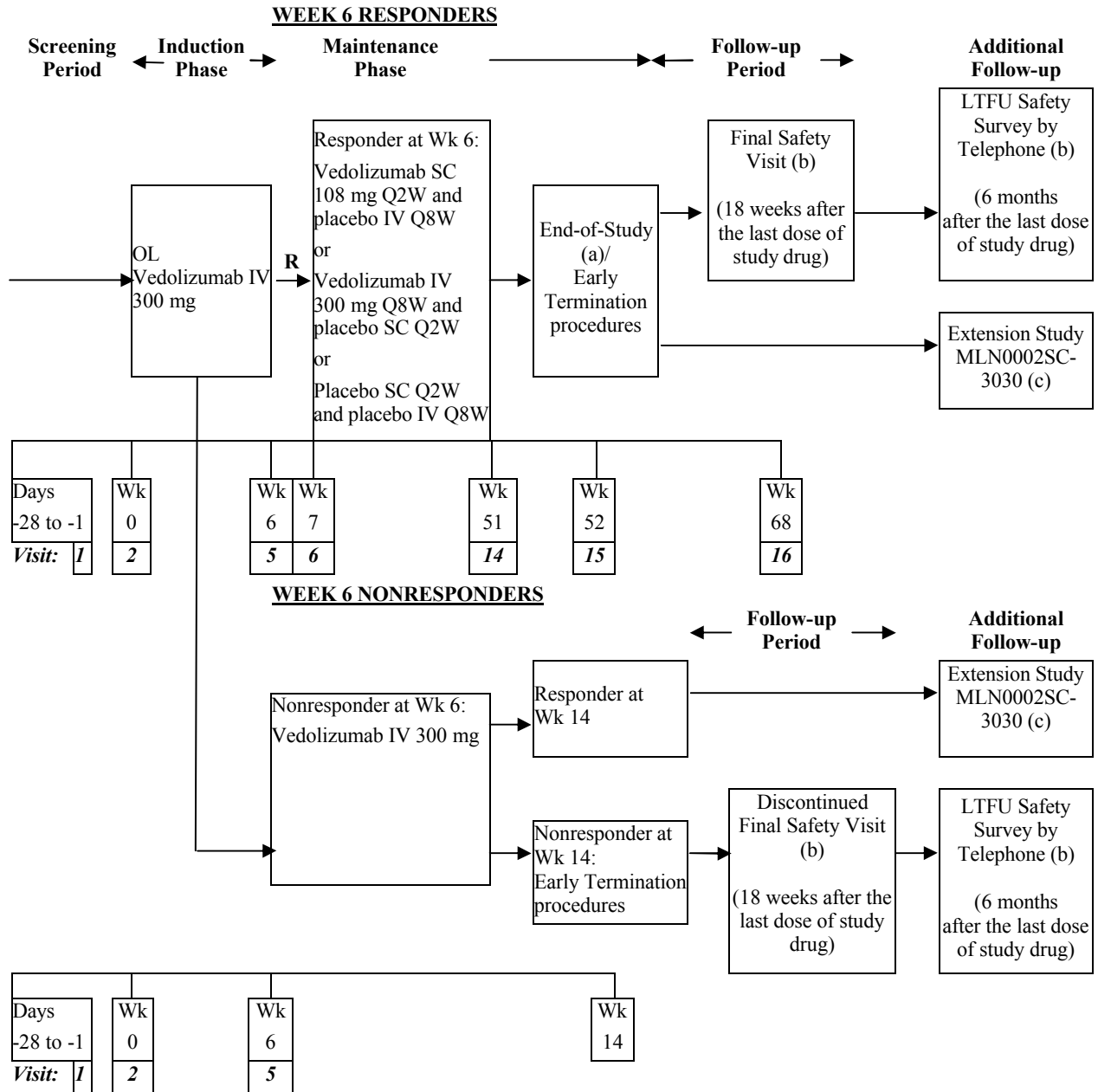
Subjects who do not participate in the OLE trial or are discontinued, will complete the End-of-Study Visits or Early Termination visit and then complete the Final Safety Visit 18 weeks

(ie, 5 vedolizumab half-lives) after the last dose of study drug. For subjects that are not in response at Week 14, early termination procedures will be performed at the Week 14 visit.

Additionally, subjects who do not participate in the OLE trial will be required to participate in a long-term follow-up (LTFU) safety-survey by telephone, 6 months after the last dose of study drug.

A schematic of the study design is included as [Figure 6.a](#). A schedule of assessments is listed in [Appendix A](#).

Figure 6.a Schematic of Study Design



OL=open-label, R=randomization.

(a) Subjects who consent to participate in the extension study (MLN0002-3030) may begin extension study dosing after End-of-Study Visit procedures have been completed at the Week 52 Visit.

(b) Subjects who do not enter the extension study (MLN0002SC-3030) (including early terminators and Week 14 nonresponders) will complete the Final Safety Visit 18 weeks after their last dose of study drug and participate in a Follow-up Safety Survey by Telephone 6 months after the last dose of study drug.

(c) Visit 1 of Extension Study MLN0002SC-3030 is within 1 week of completing Week 52 (Visit 15) procedures. Subjects not randomized into the Maintenance Phase (Week 6 Nonresponders) and respond at Week 14 on vedolizumab IV 300 mg are also eligible for entry into the Extension Study.

6.2 Justification for Study Design, Dose, and Endpoints

This phase 3 study is designed to evaluate the efficacy, safety, PK, and immunogenicity of multiple injections of the new presentation, vedolizumab SC, as maintenance therapy in subjects with UC. The proposed vedolizumab SC maintenance dosing regimen (108 mg Q2W) was selected to provide similar steady-state exposures to that from the approved vedolizumab IV dosing regimen (300 mg Q8W), and the safety and efficacy of the vedolizumab SC presentation is expected to be similar to that of vedolizumab IV, outside of expected local administration site events, such as injection-site reactions.

The study design allows for independent assessments of vedolizumab SC efficacy as maintenance therapy in subjects who responded to vedolizumab IV by comparing the active vedolizumab SC therapy group to the placebo group during the Maintenance Phase. It also permits double-blind, placebo-controlled comparisons of safety parameters during the Maintenance Phase. Additional measures will be taken to collect safety parameters beyond the 52-week duration of the trial, where subjects who do not enroll in OLE will have a Final Safety Visit conducted 18 weeks after the subject's last dose of study drug, and additional safety information will be collected by telephone using a LTFU survey at 6 months after the last study dose (for both SC and IV dosing).

CCI



Consistent with the currently approved vedolizumab IV label, subjects who do not achieve a clinical response at Week 6 and are not randomized into the Maintenance Phase will receive an additional vedolizumab IV infusion at Week 6 and will be eligible to participate in the OLE study if clinical response is achieved at Week 14.

The entry criteria ensure that subjects who are appropriate for treatment with biologic agents, as assessed by severity of disease and failure of one or more standard therapies (ie, corticosteroids, immunomodulators, or TNF- α antagonists), will be enrolled into the study. Entry criteria will also exclude subjects who might not benefit from drug or who might be at risk for treatment toxicities. Additional measures to ensure the safety of enrolled subjects include protocol-mandated criteria for withdrawal from the study of subjects who experience worsening of disease or require rescue medication (ie, any new medication or any increase in dose of a baseline medication required to treat new or unresolved UC symptoms, other than antidiarrheals for control of chronic diarrhea). Thus, subjects who may be treated with placebo (inactive treatment) between Weeks 6 and 52 will be withdrawn from the study if they experience treatment failure (ie, disease worsening, need for rescue medications), but may be eligible to enroll in the OLE study.

At Week 6, subjects receiving oral corticosteroids who achieve clinical response must begin a corticosteroid tapering regimen as described in Section 7.3.1.1. Subjects are allowed to continue background therapy such as 5-ASAs or immunomodulators, as indicated in the Permitted Medications and Treatments in Section 7.3.1.

The primary efficacy endpoint of this study is clinical remission at Week 52 in subjects who receive vedolizumab SC maintenance therapy compared to placebo SC therapy. This primary efficacy endpoint is generally accepted as the standard indicator of disease activity in UC subjects.

CCI

Exposure-efficacy analyses were conducted using either observed or population model predicted vedolizumab concentrations from the phase 3 vedolizumab IV studies. There was an apparent exposure-efficacy relationship in subjects with UC for both the Induction and Maintenance Phases, where higher vedolizumab concentrations were associated with higher efficacy. Based on the exposure-efficacy relationship for vedolizumab IV, the vedolizumab SC dosing regimen was selected to provide lower trough concentrations than vedolizumab IV Q4W and similar exposure to that from the approved vedolizumab IV Q8W regimen during the Maintenance Phase. It is expected that similar exposure to vedolizumab will result in similar efficacy and safety during maintenance, independent of the dosing route or formulation.

In addition to efficacy and safety evaluations, the multiple dose PK and immunogenicity of vedolizumab SC in subjects during the Maintenance Phase will be evaluated in this study. Given the long half-life of vedolizumab (approximately 25 days), blood samples will be collected up to 18 weeks (>5 half-lives) after the last dose of study drug to assess the PK of vedolizumab.

During the Maintenance Phase of this study, vedolizumab SC or placebo SC injections will be administered by the subjects or their caregivers both at clinic visits (Weeks 6, 8, 14, 22, 30, 38, 46 and 50 under HCP supervision) and outside of the clinic, while vedolizumab IV and placebo IV infusions will be administered by HCP only during clinic visits (Weeks 6, 14, 22, 30, 38, and 46). HCPs will train the subjects (and their caregivers) on the adequate technique to prepare and inject study drug during at least at the Week 6 and 8 office visits, and will also provide instructions on adequate storage of vedolizumab SC, disposal of used prefilled syringe, hypersensitivity reaction management, and contact information for any questions on vedolizumab SC use. Details on the training protocol and injection technique will be included in the appropriate Study Manual.

Pharmacogenomic analysis may be conducted to evaluate the contribution of genetic variance on drug response, eg, its efficacy and safety. Participation of study subjects in pharmacogenomic sample collection is optional (Section 9.1.16). As pharmacogenomics is an evolving science, currently many genes and their function are not yet fully understood. Future data may suggest a role of some of these genes in drug response and disease, which may lead to additional hypothesis-generating exploratory research on stored samples.

If future analysis is required, the sponsor will create a research protocol for pharmacogenomics investigations and the research protocol will require prior approval by an institutional review board (IRB) prior to implementation (Japan only).

CONFIDENTIAL

6.3 Premature Termination or Suspension of Study or Investigational Site

6.3.1 Criteria for Premature Termination or Suspension of the Study

The study will be completed as planned unless one or more of the following criteria are satisfied that require temporary suspension or early termination of the study.

- New information or other evaluation regarding the safety or efficacy of the study medication that indicates a change in the known risk/benefit profile for the product, such that the risk/benefit is no longer acceptable for subjects participating in the study.
- The Data Monitoring Committee recommends the study should be suspended or terminated.
- Significant violation of Good Clinical Practice (GCP) that compromises the ability to achieve the primary study objectives or compromises subject safety.

6.3.2 Criteria for Premature Termination or Suspension of Investigational Sites

A study site may be terminated prematurely or suspended if the site (including the investigator) is found in significant violation of GCP, protocol, or contractual agreement, is unable to ensure adequate performance of the study, or as otherwise permitted by the contractual agreement.

6.3.3 Procedures for Premature Termination or Suspension of the Study or the Participation of Investigational Site(s)

In the event that the sponsor, an IRB/independent ethics committee (IEC) or regulatory authority elects to terminate or suspend the study or the participation of an investigational site, a study-specific procedure for early termination or suspension will be provided by the sponsor; the procedure will be followed by applicable investigational sites during the course of termination or study suspension.

7.0 SELECTION AND DISCONTINUATION/WITHDRAWAL OF SUBJECTS

All entry criteria, including test results, need to be confirmed prior to first dose.

7.1 Inclusion Criteria

Subject eligibility is determined according to the following criteria prior to entry into the study:

1. In the opinion of the investigator, the subject is capable of understanding and complying with protocol requirements.
2. The subject or, when applicable, the subject's legally acceptable representative signs and dates a written, informed consent form and any required privacy authorization prior to the initiation of any study procedures.
3. The subject has a diagnosis of UC established at least 6 months prior to screening, by clinical and endoscopic evidence and corroborated by a histopathology report.
4. The subject is male or female and aged 18 to 80 years, inclusive.
5. A male subject who is nonsterilized* and sexually active with a female partner of childbearing potential* agrees to use adequate contraception* from signing of informed consent throughout the duration of the study and for 18 weeks after last dose.
6. A female subject of childbearing potential* who is sexually active with a nonsterilized* male partner agrees to use routinely adequate contraception* from signing of informed consent throughout the duration of the study and for 18 weeks after last dose.

*Definitions and acceptable methods of contraception are defined in Section 9.1.10 Contraception and Pregnancy Avoidance Procedure and reporting responsibilities are defined in Section 9.1.12 Pregnancy.

7. The subject has moderately to severely active UC as determined by a complete Mayo score of 6-12 (with an endoscopic subscore ≥ 2) within 10 days prior to the first dose of study drug. The endoscopy can be performed during the Screening Period (Day -10 to Day -5 to allow for central reading prior to first dose at Week 0).
8. The subject has evidence of UC extending proximal to the rectum (≥ 15 cm of involved colon).
9. Subjects with extensive colitis or pancolitis of >8 years duration or left-sided colitis >12 years duration must have documented evidence that a surveillance colonoscopy was performed within 12 months of the initial Screening Visit (if not performed in previous 12 months, must be performed during Screening).
10. Subjects with a family history of colorectal cancer, personal history of increased colorectal cancer risk, age >50 years, or other known risk factors must be up-to-date on colorectal cancer surveillance (may be performed during screening).

11. The subject has demonstrated an inadequate response to, loss of response to, or intolerance of at least 1 of the following agents as defined below:
- Immunomodulators:
 - i. The subject has signs and symptoms of persistently active disease despite a history of at least one 12-week regimen of oral azathioprine (≥ 1.5 mg/kg) or 6-mercaptopurine (≥ 0.75 mg/kg) (US, EU), or, at least one 8-week regimen of oral azathioprine (≥ 50 mg) or 6-mercaptopurine (≥ 30 mg) (Japan only), OR
 - ii. The subject has a history of intolerance of at least one immunomodulator (including but not limited to nausea/vomiting, abdominal pain, pancreatitis, liver function test abnormalities, lymphopenia, thiopurine S-methyltransferase [TPMT] genetic mutation, infection).
 - TNF- α antagonists:
 - i. The subject has signs and symptoms of persistently active disease despite a history of at least one induction with:
 - Infliximab: At least 4-week regimen of 5 mg/kg, 2 doses at 2 weeks apart, OR
 - Adalimumab: At least 160 mg on Day 1 and 80 mg on Day 15, OR
 - Golimumab: At least 200 mg at Week 0, and 100 mg at Week 2, OR
 - ii. The subject has recurrence of symptoms during scheduled maintenance dosing following prior clinical benefit (discontinuation despite clinical benefit does not qualify) OR
 - iii. The subject has a history of intolerance of at least 1 TNF- α antagonist (including, but not limited to infusion-related reaction, demyelination, congestive heart failure, infection).
 - Corticosteroids:
 - i. The subject has signs and symptoms of persistently active disease despite a history of at least one 4-week induction regimen that included a dose equivalent to prednisone ≥ 30 mg daily orally for 2 weeks or intravenously for 1 week, OR
 - ii. The subject has had 2 failed attempts to taper corticosteroids to below a dose equivalent to prednisone 10 mg daily orally on 2 separate occasions. In Japan, at least one failed attempt to taper corticosteroids to below a dose equivalent to prednisone 10 mg daily orally or intravenously, OR
 - iii. The subject has a history of intolerance to corticosteroids (including, but not limited to, Cushing's syndrome, osteopenia/osteoporosis, hyperglycemia, insomnia, and infection), OR
 - iv. The subject had a relapse within 3 months of stopping steroids.

7.2 Exclusion Criteria

The exclusion criteria are divided into 3 categories: gastrointestinal, infectious disease, and general. Any subject who meets any of the following criteria will not qualify for entry into the study:

7.2.1 Gastrointestinal Exclusion Criteria

1. The subject has evidence of abdominal abscess or toxic megacolon at the initial Screening Visit.
2. The subject has had extensive colonic resection, subtotal or total colectomy.
3. The subject has had ileostomy, colostomy, or known fixed symptomatic stenosis of the intestine.
4. The subject has received any of the investigational or approved non-biologic therapies (eg, cyclosporine, tacrolimus, thalidomide, methotrexate or tofacitinib except for those specifically listed in the protocol Section 7.3.1 Permitted Medications for the Treatment of UC) for the treatment of underlying disease within 30 days or 5 half-lives of screening (whichever is longer).
5. The subject has received any investigational or approved biologic or biosimilar agent within 60 days or 5 half-lives of screening (whichever is longer).
6. The subject currently requires or is anticipated to require surgical intervention for UC during the study.
7. The subject has a history or evidence of adenomatous colonic polyps that have not been removed, or has a history or evidence of colonic mucosal dysplasia.
8. The subject has a suspected or confirmed diagnosis of Crohn's enterocolitis, indeterminate colitis, ischaemic colitis, radiation colitis, diverticular disease associated with colitis, or microscopic colitis.

7.2.2 Infectious Disease Exclusion Criteria

9. The subject has evidence of an active infection during the Screening Period.
10. The subject has evidence of, or treatment for, *C. difficile* infection or other intestinal pathogen with 28 days prior to first dose of study drug.
11. The subject has chronic hepatitis B virus (HBV) infection* or chronic hepatitis C virus (HCV) infection.
* HBV immune subjects (ie, being hepatitis B surface antigen [HBsAg] negative and hepatitis B antibody positive) may, however, be included.
12. The subject has active or latent TB as evidenced by the following:

- i. A positive diagnostic TB test within 30 days prior to screening or during the Screening Period, defined as:
 1. A positive QuantiFERON test or 2 successive indeterminate QuantiFERON tests, (or, A positive T-SPOT TB test [Japan only]), OR,
 2. A tuberculin skin test reaction ≥ 5 mm.
Note: if subjects have received BCG vaccine then a QuantiFERON TB Gold test should be performed instead of the tuberculin skin test.
- OR
- ii. Chest X-ray within 3 months prior to Week 0 which is suspicious for pulmonary TB, and a positive or 2 successive indeterminate QuantiFERON tests (or, A positive T-SPOT TB test [Japan only]) within 30 days prior to Screening or during the Screening Period.
Note: subjects with documented previously treated TB with a negative QuantiFERON test can be included in the study.
13. The subject has any identified congenital or acquired immunodeficiency (eg, common variable immunodeficiency, human immunodeficiency virus [HIV] infection, organ transplantation).
 14. The subject has received any live vaccinations within 30 days prior to screening.
 15. The subject has a clinically significant infection (eg, pneumonia, pyelonephritis) within 30 days prior to screening, or ongoing chronic infection.
 16. The subject has used a topical (rectal) treatment with 5-aminosalicylic acid (5-ASA) or corticosteroid enemas/suppositories within 2 weeks of the administration of the first dose of study drug.

7.2.3 General Exclusion Criteria

17. The subject has had previous exposure to approved or investigational anti-integrins (eg, natalizumab, efalizumab, etrolizumab, AMG 181), anti-MAdCAM-1 antibodies, or rituximab.
18. The subject has had prior exposure to vedolizumab.
19. The subject has had hypersensitivity or allergies to any of the vedolizumab excipients.
20. The subject has any unstable or uncontrolled cardiovascular, pulmonary, hepatic, renal, GI, genitourinary, hematological, coagulation, immunological, endocrine/metabolic, or other medical disorder that, in the opinion of the investigator, would confound the study results or compromise subject safety.
21. The subject has had any surgical procedure requiring general anesthesia within 30 days prior to screening or is planning to undergo major surgery during the study period.
22. The subject has any history of malignancy, except for the following: (a) adequately treated nonmetastatic basal cell skin cancer; (b) squamous cell skin cancer that has been adequately

treated and that has not recurred for at least 1 year prior to screening; and (c) history of cervical carcinoma in situ that has been adequately treated and that has not recurred for at least 3 years prior to screening. Subjects with remote history of malignancy (eg, >10 years since completion of curative therapy without recurrence) will be considered based on the nature of the malignancy and the therapy received and must be discussed with the sponsor on a case-by-case basis prior to screening.

23. The subject has a history of any major neurological disorders, including stroke, multiple sclerosis, brain tumor, demyelinating or neurodegenerative disease.
24. The subject has a positive PML subjective symptom checklist at Screening (or prior to the administration of study drug at Week 0).
25. The subject has any of the following laboratory abnormalities during the Screening Period:
 - i. Hemoglobin level <8 g/dL.
 - ii. White blood cell (WBC) count < $3 \times 10^9/L$.
 - iii. Lymphocyte count < $0.5 \times 10^9/L$.
 - iv. Platelet count < $100 \times 10^9/L$ or > $1200 \times 10^9/L$.
 - v. ALT or AST > $3 \times$ the upper limit of normal (ULN).
 - vi. Alkaline phosphatase > $3 \times$ ULN.
 - vii. Serum creatinine > $2 \times$ ULN.
26. Removed in Amendment 03.
27. The subject has a history of drug abuse (defined as any illicit drug use) or a history of alcohol abuse within 1 year prior to screening.
28. The subject has an active psychiatric problem that, in the investigator's opinion, may interfere with compliance with study procedures.
29. The subject or caregiver is unable to attend all the study visits or comply with study procedures.
30. The subject is required to take excluded medications listed in Section 7.3.
31. The subject is unwilling or unable to self inject, or does not have a caregiver (defined as a legal adult) to inject the study medication.
32. Female subjects who are lactating or have a positive serum pregnancy test during the Screening Period or a positive urine pregnancy test at Week 0, prior to study drug administration.
33. If female, the subject is intending to become pregnant before, during, or within 18 weeks after participating in this study; or intending to donate ova during such time period.

34. If male, the subject intends to donate sperm during the course of this study or for 18 weeks thereafter.
35. The subject is an immediate family member, study site employee, or is in a dependent relationship with a study site employee who is involved in conduct of this study (eg, spouse, parent, child, sibling) or may consent under duress.

7.3 Excluded Medications and Treatments

The following medications are excluded from use during the study:

- Any treatment for UC other than those listed in Section 7.3.1 (either approved or investigational).
- All live vaccines from 30 days prior to screening to at least 6 months after the last dose of study drug.
- Either approved or investigational biological agents for the treatment of non-IBD conditions, other than localized injections (eg, intraocular injections for wet macular degeneration).
- Chronic nonsteroidal anti-inflammatory drug (NSAID) use. (Note: occasional use of NSAIDs and acetaminophen for headache, arthritis, myalgias, menstrual cramps, etc. and daily use of baby or low-dose [81-162.5 mg] aspirin for cardiovascular prophylaxis are permitted.)
- Leukocytapheresis (LCAP; white blood apheresis) or granulocytapheresis (GCAP) (Japan only).
- Subjects must be instructed not to take any medications, including over-the-counter products, without first consulting with the investigator.

7.3.1 Permitted Medications and Treatments

- The subject may be receiving a therapeutic dose of the following drugs:
 - Oral 5-ASAs compounds provided that the dose has been stable for the 2 weeks immediately prior to first dose of study drug. The dose for these medications should remain stable throughout the study.
 - Oral corticosteroid therapy (prednisone at a stable dose ≤ 30 mg/day, budesonide at a stable dose ≤ 9 mg/day, or equivalent steroid) provided that the dose has been stable for the 4 weeks immediately prior to first dose of study drug if corticosteroids have just been initiated, or for the 2 weeks immediately prior to first dose of study drug if corticosteroids are being tapered. Corticosteroid doses should remain stable until the subject meets the criteria for initiating a corticosteroid tapering regimen (see Section 7.3.1.1).
 - Probiotics (eg, Culturelle, *Saccharomyces boulardii*) provided that the dose has been stable for the 2 weeks immediately prior to first dose of study drug. The dose for these medications should remain stable throughout the study.

- Antidiarrheals (eg, loperamide, diphenoxylate with atropine) for control of chronic diarrhea; stable doses are encouraged.
- Azathioprine or 6-mercaptopurine, provided that the dose has been stable for the 8 weeks immediately prior to first dose of study drug. Dose(s) should remain stable, unless the medication is discontinued due to a toxicity related to the medication. Even if the toxicity resolves, azathioprine or 6-mercaptopurine will not be re-started.
- For immunosuppressives, oral 5-ASAs, probiotics and antibiotics for UC, dose reduction or discontinuation per label will be allowed only due to adverse reactions. For oral corticosteroid, as per the tapering schedule (see Section 7.3.1.1).
- **Need for Rescue Medications:** In this study, any new medication or any increase in dose of a baseline medication required to treat new or unresolved UC symptoms (other than antidiarrheals for control of chronic diarrhea) is considered a rescue medication. An increase in corticosteroid dose back to baseline for subjects undergoing corticosteroid tapering within the guidelines presented in Section 7.3.1.1 is not considered rescue medication. Administration of rescue medications, approved or investigational, constitutes treatment failure. Rescue medications should not be withheld if, in the opinion of the investigator, failure to prescribe them would compromise subject safety.

7.3.1.1 Oral Corticosteroid Dosing and Tapering

- At Week 6, subjects receiving oral corticosteroids who achieved clinical response will begin a corticosteroid tapering regimen. The tapering schedule is as follows:
 - For prednisone at doses >10 mg/day (or equivalent), the dose should be reduced at a rate of 5 mg/week until a 10 mg/day dose is reached.
 - For prednisone at doses ≤10 mg/day (or equivalent) or once a 10 mg/day dose (or equivalent) is achieved by tapering, the dose should be reduced at a rate of 2.5 mg/week until discontinuation.

For subjects who cannot tolerate the corticosteroid taper without recurrence of clinical symptoms, corticosteroids may be increased up to the original dose at the start of induction therapy (should not exceed baseline dose). In such cases, the tapering regimen above must be reinitiated within 2 weeks. Subjects who consistently cannot be tapered should be withdrawn from the study according to Section 7.4.

Currently, there is no evidence to support the routine prophylactic administration of premedication (eg, antihistamines, corticosteroids) to subjects receiving vedolizumab; hence, such premedication is unlikely to be necessary or beneficial. At the discretion of the investigator, however, subjects may be administered premedication prior to any study drug administration. Corticosteroids, if given as a premedication, should be limited to the day of administration.

7.4 Criteria for Discontinuation or Withdrawal of a Subject

The primary reason for discontinuation or withdrawal of the subject from the study or study medication should be recorded in the electronic case report form (eCRF) using the following categories. For screen failure subjects, refer to Section 9.1.22.

1. Pretreatment event (PTE) or AE. The subject has experienced a PTE or AE that requires early termination because continued participation imposes an unacceptable risk to the subject's health or the subject is unwilling to continue because of the PTE or AE.

- LFT Abnormalities.

Study medication should be discontinued immediately with appropriate clinical follow-up (including repeat laboratory tests, until a subject's laboratory profile has returned to normal/baseline status, see Section 9.1.9), if the following circumstances occur at any time during study medication treatment:

- ALT or AST $>8 \times$ ULN, or
- ALT or AST $>5 \times$ ULN and persists for more than 2 weeks, or
- ALT or AST $>3 \times$ ULN in conjunction with elevated total bilirubin $>2 \times$ ULN or international normalized ratio (INR) >1.5 , or
- ALT or AST $>3 \times$ ULN with appearance of fatigue, nausea, vomiting, right upper quadrant pain or tenderness, fever, rash and/or eosinophilia ($>5\%$).

2. Significant protocol deviation. The discovery after the first dose of study medication that the subject failed to meet protocol entry criteria or did not adhere to protocol requirements, and continued participation poses an unacceptable risk to the subject's health.
3. Lost to follow-up. The subject did not return to the clinic and attempts to contact the subject were unsuccessful. Three attempts to contact the subject must be documented (ie, 2 attempts by phone and 1 attempt by registered letter).
4. Voluntary withdrawal. The subject (or subject's legally acceptable representative) wishes to withdraw from the study. The reason for withdrawal, if provided, should be recorded in the eCRF.

Note: All attempts should be made to determine the underlying reason for the withdrawal and, where possible, the primary underlying reason should be recorded (ie, withdrawal due to an AE or lack of efficacy should not be recorded in the "voluntary withdrawal" category).

5. Study termination. The sponsor, IRB, IEC, or regulatory agency terminates the study.
6. Pregnancy. The subject is found to be pregnant.

Note: If the subject is found to be pregnant, the subject must be withdrawn immediately. The procedure is described in Section 9.1.11.

7. Lack of efficacy. The subject should be discontinued from the study if the following criteria apply:
- Week 14 discontinuation in subjects not randomized to the Maintenance Phase, due to not achieving a clinical response at Week 6 who also did not achieve a clinical response at Week 14 after having received a third vedolizumab IV infusions at Week 6.
 - Treatment failure during the Maintenance Phase, defined as disease worsening (as defined in Section 3.5), need for rescue medications (as defined in Section 7.3.1), or need for surgical intervention for treatment of UC.
 - Leukopenia or Lymphopenia: WBC and lymphocyte counts will be monitored for all subjects. Azathioprine, or 6-mercaptopurine, if applicable, should be discontinued and the dose of study drug held for an absolute lymphocyte count $<0.5 \times 10^9/L$ at any point in the study. The absolute lymphocyte count must be repeated at appropriate intervals as determined by the investigator. The next dose of study drug can be administered only if the absolute lymphocyte count is $\geq 0.5 \times 10^9/L$. If the absolute lymphocyte count remains $<0.5 \times 10^9/L$, study drug should be discontinued and the subject withdrawn from the study.

8. Other:

Note: The specific reasons should be recorded in the “specify” field of the eCRF.

Subjects who discontinue due to lack of efficacy are permitted to enroll in the OLE study (MLN0002SC-3030) according to the criteria in Table 7.a.

Table 7.a Eligibility for Study MLN0002SC-3030 Based on Reason for Withdrawal

Reason for Withdrawal	Time Point		
	Prior to Week 6	Weeks 6-14	Beyond Week 14
Disease worsening (a)	Not applicable	Eligible	Eligible
Requires rescue medication, but does not meet criteria for disease worsening	Not applicable	Not Eligible	Eligible
AE related to study drug leading to discontinuation of study drug	Not eligible	Not eligible	Not eligible
Requires surgical intervention for UC	Not eligible	Not eligible	Not eligible

(a) See Section 3.5 for study definitions.

7.5 Procedures for Discontinuation or Withdrawal of a Subject

The investigator may discontinue a subject’s study participation at any time during the study when the subject meets the study termination criteria described in Section 7.4. In addition, a subject may discontinue his or her participation without giving a reason at any time during the study. Should a subject’s participation be discontinued, the primary criterion for termination must be recorded by the investigator. In addition, efforts should be made to perform all procedures scheduled for the ET Visit, Final Safety Visit, and the LTFU survey. Discontinued or withdrawn subjects will not be replaced.

8.0 CLINICAL TRIAL MATERIAL MANAGEMENT

This section contains information regarding all medication and materials provided directly by the sponsor, and/or sourced by other means, that are required by the study protocol, including important sections describing the management of clinical trial material.

8.1 Study Medication and Materials

8.1.1 Dosage Form, Manufacturing, Packaging, and Labeling

In this protocol, the term study medication refers to all or any of the drugs defined below.

8.1.1.1 *Vedolizumab for Injection, for Intravenous Use (Vedolizumab IV)*

The study sites will be supplied by the sponsor with the following medication in an open-label manner: vedolizumab IV 300 mg/vial, for single use, in 20 mL vials. The study medication will be provided in a glass vial as a lyophilized solid formulation for reconstitution using sterile water for injection. Each vial will be packaged in an appropriately labeled single vial carton.

Each carton will have a single-panel or multilingual booklet label that will contain, but will not be limited to the following: sponsor's name and address, protocol number, packaging job/lot number, name and strength of the product, medication identification number, subject information, caution statement, directions for use, and storage conditions.

The intravenous placebo will be 250 mL (100 mL in Japan) of 0.9% sodium chloride IV (for use only during double-blind, double-dummy, Maintenance Phase).

Additional reference information and administration instructions can be found in the Pharmacy Manual.

8.1.1.2 *Vedolizumab Injection, for Subcutaneous Use (Vedolizumab SC)*

The study sites will be supplied with the following medication in a blinded manner: vedolizumab SC [CCI] or placebo in a pre-filled syringe. The study medication is a liquid presentation provided in pre-filled syringe with backstop and plunger rod assembled together. Each syringe will be packaged in folding box or carton.

The subcutaneous placebo is a liquid solution supplied at [CCI] in pre-filled syringes for SC injection with similar formulation composition as the vedolizumab SC solution, and administered via SC injection.

Each carton will have a single-panel or multilingual booklet label that will contain, but will not be limited to the following: sponsor's name and address, protocol number, packaging job/lot number, name and strength of the product, medication identification number, subject information, caution statement, directions for use, and storage conditions.

8.1.1.3 *Sponsor-Supplied Drug*

Sponsor-supplied drugs referenced in other sections of the protocol include the following:

- Vedolizumab for Injection, for Intravenous Use (vedolizumab IV).
- Vedolizumab Injection, for Subcutaneous Use (vedolizumab SC)/vedolizumab SC placebo.

8.1.1.4 *Other Protocol-Specified Materials*

The following supplies will also be required for study drug administration and are to be provided by the clinical study center unless otherwise indicated:

- Bottled sterile water for injection (for study drug reconstitution).
- 250 mL 0.9% sodium chloride for injection in polyvinyl chloride (PVC) IV bag(s) or 250 mL 0.9% sodium chloride in alternative IV bags or bottles listed in the Pharmacy Manual. (100 mL in Japan).
- PVC infusion line or alternative infusion line listed in the Pharmacy Manual.
- Alcohol swabs.
- Needle sharps container (provided by sponsor).

8.1.2 **Storage**

Investigational drug must be kept in an appropriate, limited-access, secure place until it is used or returned to the sponsor or designee for destruction. Investigational drug must be stored under the conditions specified on the label, and remain in the original container until dispensed.

Vedolizumab IV and vedolizumab SC must be stored at 2°C to 8°C (36°F to 46°F). A daily temperature log of the drug storage area must be maintained every working day.

8.1.3 **Dose and Regimen**

The dose and dosing regimen for all subjects is provided in [Table 8.a](#).

Table 8.a Dose and Dosing Regimen

Treatment Group	Dose	Treatment Description	
All Subjects	Vedolizumab IV 300 mg	Open-label	Weeks 0 and 2
A (Week 6 Non-Responders)	Vedolizumab IV 300 mg	Open-label	Week 6
B	Vedolizumab SC 108 mg	Blinded	Weeks 6-50 (Q2W)
	Vedolizumab IV Placebo	Blinded	Weeks 6-46 (Q8W)
C	Vedolizumab IV 300 mg	Blinded	Weeks 6-46 (Q8W)
	Vedolizumab SC Placebo	Blinded	Weeks 6-50 (Q2W)
D	Vedolizumab IV Placebo	Blinded	Weeks 6-46 (Q8W)
	Vedolizumab SC Placebo	Blinded	Weeks 6-50 (Q2W)

8.1.4 Overdose

An overdose is defined as a known deliberate or accidental administration of investigational drug, to or by a study subject, at a dose above that which is assigned to the individual subject according to the study protocol.

All cases of overdose (with or without associated AEs) will be documented on an Overdose page of the eCRF, in order to capture this important safety information consistently in the database. Cases of overdose without manifested signs or symptoms are not considered AEs. AEs associated with an overdose will be documented on AE eCRF(s) according to Section 10.0, Pretreatment Events, Adverse Events, and Product Complaints.

SAEs associated with overdose should be reported according to the procedure outlined in Section 10.2.2, Collection and Reporting of SAEs.

In the event of drug overdose, the subject should be treated symptomatically.

8.2 Investigational Drug Assignment and Dispensing Procedures

Subjects will be assigned to receive treatment according to the schedule allocated to each study site.

The investigator or investigator's designee will access the interactive web response system (IWRS) at Screening to register a subject and obtain a subject identification number to identify the subject throughout the study. The investigator or the investigator's designee will utilize the IWRS to enroll the subject into the study. The medication identification (ID) number of the investigational drug to be dispensed will then be provided by the IWRS as well as at subsequent visits. If sponsor-supplied drug is lost or damaged, the site can request a replacement from IWRS. Refer to the appropriate study manual provided separately for additional information.

For IV infusion, subjects will receive a 300 mg dose of vedolizumab IV infusion over approximately 30 minutes. Longer infusion times of up to 60 minutes may be used based on study observations. Vedolizumab IV should be administered by a HCP prepared to manage

hypersensitivity reactions including anaphylaxis, if they occur. Appropriate monitoring and medical support measures should be available for immediate use. Subjects should be observed for 2 hours following the first 2 infusions, at a minimum, and one hour after each subsequent infusion in a room where appropriate treatment for infusion-related reactions is available. The subject should be considered clinically stable by the investigator or designee prior to discharge.

For SC injection, the recommended sites are the abdomen (except for the 2-inch area around the navel), the outer area of the upper arms, or the front of the thighs. The upper arm injection site should be used only by caregivers administering the injection. The injection site should be changed for consecutive injections. Each new injection should be given at least 1 inch from a site used before.

During clinic visits, SC injections should be administered by the subject (or caregiver) under the supervision of a HCP prepared to manage hypersensitivity reactions including anaphylaxis, if they occur. Appropriate monitoring and medical support measures should be available for immediate use. Subjects should be observed during the SC administration and for one hour following completion of the administration.

Study medication storage, disposal and directions for use for the subject self-injections will be described in information provided to the subject.

For further investigational drug and dispensing information, please refer to the pharmacy and/or the appropriate study manual.

8.3 Randomization Code Creation and Storage

After receiving open-label infusions of vedolizumab IV 300 mg at Weeks 0 and 2, subjects will be assessed for clinical response (as determined by a central reader) at Week 6.

Subjects with clinical response at Week 6 will be randomized at a 2:1:1 ratio to receive the following, beginning at Week 6 through Week 50:

- Injections of active vedolizumab SC 108 mg Q2W and placebo IV infusions Q8W (N=94).
- Infusions of active vedolizumab IV 300 mg Q8W and placebo SC injections Q2W (N=47).
- Placebo SC injections Q2W and placebo IV infusions Q8W (N=47).

Randomization will be stratified by:

- Concomitant use of oral corticosteroids.
- Clinical remission status at Week 6.
- Previous TNF- α antagonists failure or concomitant immunomodulator (azathioprine, 6-mercaptopurine) use.

Randomization personnel of the sponsor or designee will generate the randomization schedule prior to the start of the study. An IWRS system will be used for subject randomization. All

randomization information will be stored in a secured area, accessible only by authorized personnel.

8.4 Investigational Drug Blind Maintenance and Unblinding

The investigational drug blind will be maintained using the IWRS. In addition, in order to maintain the blind, all study site personnel except the investigational pharmacist or pharmacy designee will be blinded to the treatment assignments for the duration of the study.

The investigational drug blind may be broken by the investigator if information concerning the investigational drug is essential for the medical treatment of the subject. The medical monitor must be informed of the unblinding at the earliest possible opportunity. In nonurgent cases, the medical monitor must be contacted before the subject is unblinded.

For unblinding a subject, the investigational drug blind can be obtained by the investigator, by accessing the IWRS. The sponsor must be notified as soon as possible if the investigational drug blind is broken. The date, time, and reason the blind is broken must be recorded in the source documents and eCRF as appropriate.

8.5 Accountability and Destruction of Sponsor-Supplied Drugs

Drug supplies will be counted and reconciled at the site before being returned to the sponsor or designee.

The blinded investigator or blinded designee and delegated unblinded pharmacy staff, must ensure that the sponsor-supplied drug is used in accordance with the protocol and is dispensed only to subjects enrolled in the study. To document appropriate use of sponsor-supplied drug, [vedolizumab IV vials and vedolizumab SC/placebo SC pre-filled syringes], the appropriate blinded or unblinded person must maintain respective records of all sponsor-supplied drug delivery to the site, site inventory, dispensation, and use, by each subject, and return to the sponsor or designee.

Records of the subject number, the date study drug was dispensed, and the study drug/cohort assignment will be maintained by the unblinded pharmacist.

Upon receipt of sponsor-supplied drug, the appropriate unblinded pharmacist must verify the contents of the shipments against the packing list. The verifier should ensure that the quantity is correct, and the medication is in good condition. If quantity and conditions are acceptable, they should acknowledge the receipt of the shipment (by signing the bottom half of the packing list and faxing per instructions provided on the form/ or by recording in IWRS). If there are any discrepancies between the packing list and the actual product received, Takeda must be contacted to resolve the issue. The packing list should be filed in the investigator's essential document file (unblinded pharmacy file).

The unblinded pharmacist must maintain 100% accountability for all sponsor-supplied drugs received and dispensed. Proper drug accountability includes, but is not limited to:

- Continuously monitoring expiration dates if expiry date is provided to the investigator or designee.
- Frequently verifying that actual inventory matches documented inventory.
- Verifying that the log is completed for the (drug lot/medication ID/job number) used to prepare each dose.
- Verifying that all containers used/assigned are documented accurately on the log.
- Verifying that required fields are completed accurately and legibly.

If any dispensing errors or discrepancies are discovered, the sponsor must be notified immediately.

The IWRS will include all required information as a separate entry for each subject to whom sponsor-supplied drug is dispensed.

The unblinded pharmacist must record the current inventory of all sponsor-supplied drugs on a sponsor-approved drug accountability log. The following information will be recorded at a minimum: protocol number and title, name of investigator, site identifier and number, description of sponsor-supplied drugs, date and amount dispensed including initials, date and amount returned to the site by the subject, and the initials, seal, or signature of the person dispensing the drug. The log should include all required information as a separate entry for each subject to whom sponsor-supplied drug is dispensed.

All study drug that was not returned to the site by a subject must be investigated by the site and appropriately documented in the subject's medical records and on the drug accountability log.

Prior to site closure or at appropriate intervals, an unblinded representative from the sponsor or its designee will perform sponsor-supplied drug accountability and reconciliation before sponsor-supplied drugs are returned to the sponsor or its designee for destruction. The designated unblinded pharmacist will retain a copy of the documentation regarding sponsor-supplied drug accountability, return, and/or destruction, and originals will be sent to the sponsor or designee.

9.0 STUDY PLAN

9.1 Study Procedures

The following sections describe the study procedures and data to be collected. For each procedure, subjects are to be assessed by the same investigator or site personnel whenever possible. The Schedule of Study Procedures is located in [Appendix A](#).

9.1.1 Informed Consent Procedure

The requirements of the informed consent are described in Section [15.2](#).

Informed consent must be obtained prior to the subject entering into the study, and before any protocol-directed procedures are performed.

A unique subject identification number (subject number) will be assigned by IWRS to each subject at the time of screening; this subject number will be used throughout the study.

9.1.1.1 Pharmacogenomic Informed Consent Procedure

A separate informed consent form pertaining to the storage of samples must be obtained prior to collecting blood samples and tissue samples for pharmacogenomic research for this study. The provision of consent to collect and analyze the pharmacogenomic samples is optional and independent of consent to the other aspects of the study.

9.1.2 Demographics, Medical History, and Medication History Procedure

Demographic information to be obtained will include age or date of birth (depending on local regulations), sex, Hispanic ethnicity (as applicable, US only), race as described by the subject and smoking status of the subject at screening.

Medical history to be obtained will include determining whether the subject has any significant conditions or diseases relevant to the disease under study that stopped at or prior to signing of informed consent. Ongoing conditions are considered concurrent medical conditions (see Section [9.1.8](#)).

Medication history information to be obtained includes any medication relevant to eligibility criteria stopped at or within 30 days prior to signing of informed consent.

9.1.3 Physical Examination Procedure

A baseline physical examination (defined as the assessment prior to first dose of investigational drug) will consist of the following body systems: (1) eyes; (2) ears, nose, throat; (3) cardiovascular system; (4) respiratory system; (5) gastrointestinal system; (6) dermatologic system; (7) extremities; (8) musculoskeletal system; (9) nervous system; (10) lymph nodes; (11) other. All subsequent physical examinations should assess clinically significant changes from the assessment prior to first dose examination.

9.1.4 Weight and Height

A subject should have weight and height measured while wearing indoor clothing and with shoes off. The Takeda standard for collecting height is centimeters without decimal places and for weight it is kilograms (kg) with 1 decimal place.

9.1.5 Vital Sign Procedure

Vital signs will include body temperature, respiratory rate, blood pressure (sitting), and pulse (bpm).

When vital signs are scheduled at the same time as blood draws, the blood draw will take priority and vital signs will be obtained within 0.5 hour before the scheduled blood draw.

On dosing days, vital signs are taken predose.

9.1.6 Primary Efficacy Measurement

Primary and secondary efficacy assessments during the Maintenance Phase will be based on Mayo scores. A complete Mayo score will be obtained within 10 days prior to enrollment, using subject diary entries within the 10 days prior to enrollment and flexible sigmoidoscopy results obtained during the Screening Period; this assessment will be the baseline complete Mayo score for disease activity assessment. Sigmoidoscopy will be done at Week 6 and Week 52 (or ET Visit), and a complete Mayo score will be calculated for these visits for endpoints assessment. All endoscopies (Week 0, 6, and 52) will be centrally read. Additional information regarding the sigmoidoscopy requirements and central reader assessments can be found in the appropriate Study Manual.

The baseline complete Mayo score will be used for the comparison with the Week 6 complete Mayo score to determine response and remission at Week 6 and with the Week 52 complete Mayo score to determine response and remission at Week 52.

The Week 0, 6, and 52 complete Mayo score will be calculated by the investigator or designee and recorded in the subject's source documents, with the endoscopic component subscore being provided by the central reader. The Week 6 assessment will determine whether the subject achieved clinical response at Week 6, and therefore, determine eligibility for randomization in to the Maintenance Phase.

A partial Mayo score will be derived at the visits at which endoscopy will not be performed.

Refer to [Appendix F](#) for information on the Mayo scoring system.

9.1.6.1 Diary Completion and Review

Diary entries will be made daily by subjects from screening to end of study, and will be used for Mayo score calculation. At screening, subjects will be instructed on how to appropriately complete the daily diary. The symptoms of UC must be recorded throughout the study, including the Screening Period. Diary entries will be made daily by the subject through a validated electronic

system. In addition to the subject reported Mayo subscore components, subjects will use the validated electronic system to enter daily absolute stool frequency.

Because the flexible sigmoidoscopy preparation can interfere with the assessment of other clinical parameters, diary entries used to calculate the complete Mayo score should not be taken from the day before (the preparation day), the day of, and the day after the flexible sigmoidoscopy is performed.

Entries should be reviewed and monitored by the study staff (see the appropriate Study Manual).

9.1.7 Documentation of Concomitant Medications

Concomitant medication is any drug given in addition to the study medication. These may be prescribed by a physician or obtained by the subject over the counter. Concomitant medication is not provided by Takeda. At each study visit, subjects will be asked whether they have taken any medication other than the study medication (used from signing of informed consent through the end of the study), and all medication including vitamin supplements, over-the-counter medications, and oral herbal preparations, must be recorded in the eCRF. Medications used specifically for premedication purposes will be collected separately in the eCRF.

9.1.8 Documentation of Concurrent Medical Conditions

Concurrent medical conditions are those significant ongoing conditions or diseases that are present at signing of informed consent. This includes clinically significant laboratory, ECG, or physical examination abnormalities noted at screening or baseline examination. The condition (ie, diagnosis) should be described.

9.1.9 Procedures for Clinical Laboratory Samples

All samples will be collected in accordance with acceptable laboratory procedures at the time points specified in the schedule of events. The maximum volume of blood at any single visit is approximately 22 mL, and the approximate total volume of blood for the study is 230 mL. Details of these procedures and required safety monitoring will be given in the laboratory manual.

Clinical laboratory tests to be performed in this study are summarized in [Table 9.a](#). Refer to the Schedule of Events in [Appendix A](#) for timing of all assessments. See Laboratory Manual for testing regimen.

Table 9.a Clinical Laboratory Tests

Hematology	Serum Chemistry	Urinalysis
RBC	ALT	Bilirubin
WBC w/differential	Albumin	Blood
Hemoglobin	Alkaline phosphatase	Glucose
Hematocrit	Amylase	Ketones
Platelets	Lipase	Leukocyte esterase
PT/INR	AST	Nitrite
	Total and direct bilirubin	pH
	Total protein	Protein
	Creatinine	Specific Gravity
	Blood urea nitrogen	
	Creatine kinase	Microscopic (to be
	GGT	obtained in the event of
	Potassium	positive leukocyte esterase
	Sodium	or blood, will include
	Calcium	WBCs, RBCs, and cast[s])
	Chloride	
	Bicarbonate	
	Magnesium	
	Phosphorus	
	Uric Acid	
	Glucose	
Other:		
HIV		Beta hCG and Urine Pregnancy hCG
Hepatitis panel, including HBsAg, HBsAb, and anti-HCV		(female subjects of childbearing potential)
Fecal Calprotectin		FSH (a)
AVA		<i>C. difficile</i>
Pharmacogenomic sample		
Quantiferon for TB		
PK		

FSH=follicle-stimulating hormone, GGT= γ -Glutamyl transferase, hCG=human chorionic gonadotropin, PT=prothrombin time, RBC=red blood cells.

(a) FSH level will be obtained for female subjects at Screening if they are postmenopausal by history (ie, last regular menstrual cycle >1 years) and not surgically sterile. The FSH result must be >40 IU/L for the subject to be permitted not to use adequate contraception.

Central laboratories will perform laboratory tests for hematology, serum chemistries, and urinalysis as well as specialty testing outlined above. The results of safety laboratory tests will be returned to the investigator, who is responsible for reviewing and filing these results. Refer to the schedule of events for timing of all assessments.

If subjects experience ALT or AST >3 \times ULN, follow-up laboratory tests should be performed within a maximum of 7 days and preferably within 48-72 hours after the abnormality was noted.

(Please refer to Section 7.4 for discontinuation criteria, and Section 10.2.3 for the appropriate guidance on Reporting of Abnormal Liver Function Tests in relation to ALT or AST >3 \times ULN in conjunction with total bilirubin >2 \times ULN.)

If the ALT or AST remains elevated $>3 \times \text{ULN}$ on these 2 consecutive occasions the investigator must contact the Medical Monitor for consideration of additional testing, close monitoring, possible discontinuation of study medication, discussion of the relevant subject details and possible alternative etiologies. The abnormality should be recorded as an AE (please refer to Section 10.2.3 Reporting of Abnormal Liver Function Tests for reporting requirements).

9.1.10 Contraception and Pregnancy Avoidance Procedure

From signing of informed consent, throughout the duration of the study, and for 18 weeks after last dose of study medication, nonsterilized** male subjects who are sexually active with a female partner of childbearing potential* must use barrier contraception (eg, condom with spermicidal cream or jelly). In addition, they must be advised not to donate sperm during this period.

From signing of informed consent, throughout the duration of the study, and for 18 weeks after last dose of study medication, female subjects of childbearing potential* who are sexually active with a nonsterilized male partner** must use adequate contraception. In addition they must be advised not to donate ova during this period.

*Females NOT of childbearing potential are defined as those who have been surgically sterilized (hysterectomy, bilateral oophorectomy or tubal ligation) or who are postmenopausal (eg, defined as at least 1 year since last regular menses with an FSH >40 IU/L or at least 5 years since last regular menses, confirmed before any study medication is implemented).

**Sterilized males should be at least 1 year postvasectomy and have confirmed that they have obtained documentation of the absence of sperm in the ejaculate.

An acceptable method of contraception is defined as one that has no higher than a 1% failure rate. In this study, where medications and devices containing hormones are included, the only acceptable methods of contraception will be:

Barrier methods (each time the subject has intercourse):	Intrauterine devices (IUDs):	Hormonal contraceptives:
<ul style="list-style-type: none">• Male condom PLUS spermicide.• Cap (plus spermicidal cream or jelly) PLUS male condom and spermicide.• Diaphragm (plus spermicidal cream or jelly) PLUS male condom and spermicide.	<ul style="list-style-type: none">• Copper T PLUS condom or spermicide.• Progesterone T PLUS condom or spermicide.	<ul style="list-style-type: none">• Implants.• Hormone shot/injection.• Combined pill.• Minipill.• Patch.• Vaginal ring PLUS male condom and spermicide.

Subjects will be provided with information on acceptable methods of contraception as part of the subject informed consent process and will be asked to sign a consent form stating that they

understand the requirements for avoidance of pregnancy, donation of ova, and sperm donation during the course of the study.

During the course of the study, subjects will receive continued guidance with respect to the avoidance of pregnancy as part of the study procedures ([Appendix A](#)).

All female subjects of child bearing potential will have a serum pregnancy test during screening and at Week 52 (or ET Visit) and Week 68 (or Final Safety Visit). A urine pregnancy test will be completed for all females of child bearing potential on a monthly basis prior to administration of study drug.

9.1.11 Pregnancy

If any subject is found to be pregnant during the study she should be withdrawn and any sponsor-supplied drug should be immediately discontinued and returned to the study site. In addition, any pregnancies in the partner of a male subject during the study or for 18 weeks after the last dose, should also be recorded following authorization from the subject's partner.

If the pregnancy occurs during administration of active study medication or within 18 weeks of the last dose of active study medication, the pregnancy should be reported immediately, using a pregnancy notification form, to the contact listed in Section 1.0.

Should the pregnancy occur during or after administration of blinded drug, the investigator must inform the subject of their right to receive treatment information. If the subject chooses to receive unblinded treatment information, the individual blind should be broken by the investigator. Subjects randomized to placebo need not be followed.

If the female subject, or female partner of a male subject, agrees to the primary care physician being informed, the investigator should notify the primary care physician that the subject was participating in a clinical study at the time the subject/female partner of the subject became pregnant and provide details of treatment the subject received.

All pregnancies from subjects on active study drug will be followed up to final outcome, using the pregnancy form. The outcome, including any premature termination, must be reported to the sponsor. An evaluation after the birth of the child will also be conducted.

9.1.12 ECG Procedure

A standard 12-lead ECG will be recorded. The investigator (or a qualified observer at the investigational site) will interpret the ECG using 1 of the following categories: within normal limits, abnormal but not clinically significant, or abnormal and clinically significant.

Any findings from ECGs collected after study drug administration at Week 0 will be captured as AEs if, in the opinion of the investigator, there has been a clinically significant change from baseline.

Subjects will be supine and will have rested for 5 or more minutes before any ECG is recorded. Tracings will include subject number and initials and the date and time of recording and all other subject identifiers will be removed or obscured.

9.1.13 Histological Sample Collection

At each endoscopy (Week 0, 6, and 52/ET) tissue biopsies will be performed and tissue specimens be harvested and stored for future histological analyses.

All tissue specimens will be reviewed by independent central review. Additional information regarding the central reader assessments and collection and preparation of tissue samples can be found in the appropriate Study Manual.

9.1.14 Immunogenicity Sample Collection

Blood specimens for the assessment of AVA will be collected as shown in the schedule of events ([Appendix A](#)). A sample will be assessed for neutralizing AVA if AVA is detected.

Serum titers of AVA will be determined using a validated assay. Neutralizing AVA will be determined using a validated assay.

Please refer to the appropriate Study Manual for information on sample collection and preparation.

9.1.15 Pharmacokinetic Sample Collection

Blood specimens for the determination of the serum concentration of vedolizumab will be collected predose (within 30 minutes of dosing) and/or as shown in the schedule of events. Serum concentrations of vedolizumab will be determined using a validated sandwich ELISA. All samples will be analyzed regardless of the treatment groups.

9.1.16 Pharmacogenomic Sample Collection

When sampling of whole blood or mucosal tissue for pharmacogenomic analysis occurs, every subject must sign an additional informed consent/be consented in order to participate in the study.

Two whole blood samples (3 mL per sample) for deoxyribonucleic acid (DNA) isolation will be collected before dosing on Day 1 from each subject in the study. If DNA samples are not obtained on Day 1, they may be collected at any point in the study.

Two whole blood ribonucleic acid (RNA) samples (2.5 mL per sample) will be collected into PAXgeneTM tubes before dosing on Day 1.

If separately consented to by the subject, a small piece of tissue from the colonic tissue sample harvested for histological analysis (during the Screening, and Week 6, and 52 endoscopy) will be saved and stored for possible exploratory investigation to look for changes in mRNA expression patterns associated with disease or response to therapy.

- Information regarding the collection and preparation of tissue samples for pharmacogenomic analysis can be found in the appropriate Study Manual. DNA forms the basis for the genes that

make the body produce proteins such as enzymes, drug transporters or drug targets. RNA has multiple vital roles in the coding, decoding, regulation, expression of genes, and sensing and communicating responses to cellular signals. Both DNA and RNA samples may be evaluated for the genetic and expressional contribution how the drug is broken down, or how the drug affects the body. This is called a “Pharmacogenomics research study.”

Specific purposes of this study include:

- Identifying genetic reasons why certain people respond differently to vedolizumab.
- Finding out more information about how vedolizumab works.
- Generating information needed for research, development, and regulatory approval of tests to predict response to vedolizumab.
- Identifying variations in genes related to the biological target of vedolizumab.

This information may be used, for example, to develop a better understanding of the safety and efficacy of vedolizumab and other study medications, and for improving the efficiency, design and study methods of future research studies.

If necessary and feasible, a second aliquot of blood may be taken if isolation of DNA from the first sample was not successful or possible. Please refer to the appropriate Study Manual for information on sample collection and preparation.

The samples will be stored for no longer than 15 years after completion of the study. No samples will be stored for longer than permitted by the applicable law and samples will be destroyed upon notification from Takeda. “Stored samples” are defined as samples that are key-coded (the samples are stripped of all personal identifying information but a key links the samples to the clinical data collected from the sample donor) and are used in the analysis of investigational drug or related drugs.

Future analysis of the stored pharmacogenomics (PGx) samples may be conducted as appropriate.

Detailed instructions for the handling and shipping of samples are provided in the appropriate Study Manual.

9.1.17 Tuberculosis Screening

All subjects will complete TB screening to determine eligibility. Subjects will be excluded from the study if they have active or latent TB, regardless of treatment history, as defined in Section [7.2.2](#).

9.1.18 Fecal Calprotectin Sample Collection

A stool sample will be collected for the analysis of fecal calprotectin, a biomarker of intestinal inflammatory activity, as shown in the Schedule of Events ([Appendix A](#)).

9.1.19 Stool Sample

A stool sample will be obtained for culture, ova and parasite evaluation, and *C. difficile* assay. A sample will be collected and cultured during screening and at any point in the study when a subject becomes symptomatic, including worsening or return of disease activity.

9.1.20 PML Checklist



9.1.21 Patient-Reported Outcomes Instruments

Subjects will complete the IBDQ and EQ-5D health related quality of life (HRQOL) questionnaires at the time points specified in the schedule of events. Subjects will also complete the WPAI-UC to assess the impact on loss of work productivity and activity impairment.

9.1.21.1 Inflammatory Bowel Disease Questionnaire

The IBDQ is a valid and reliable [30] instrument used to assess health-related quality of life (HRQOL) in adult subjects with IBD. It includes 32 questions on 4 domains of HRQOL: Bowel Systems (10 items), Emotional Function (12 items), Social Function (5 items), and Systemic Function (5 items). Subjects are asked to recall symptoms and quality of life from the last 2 weeks and rate each item on a 7-point Likert scale (higher scores equate to higher quality of life). A total IBDQ score is calculated by summing the scores from each domain; the total IBDQ score ranges from 32 to 224.

9.1.21.2 EQ-5D Questionnaire

The EQ-5D questionnaire, developed by the 'EuroQol Research Foundation' is a simple, valid, and reliable [31] instrument used to measure general HRQOL in subjects and includes five domain items - mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Subjects choose the level of health problems they currently have on each item as "None", "Moderate", or "Extreme" and are scored a 1, 2, or 3, respectively. A composite EQ-5D score can be calculated from the individual scores to assess overall HRQOL. The EQ-5D visual analog score (VAS) score is a self-assigned rating of overall health using a 20 cm visual, vertical scale, with a score of 0 as the worst and 100 as best possible health. The EQ-5D total score and EQ-5D VAS score have been

shown in many studies to be valid and reliable instruments for measuring HRQOL in patients with GI diseases.

9.1.21.3 Work Productivity and Activity Impairment-UC

The WPAI questionnaire is a valid and reliable [32] 6-item instrument that consists of four metrics: absenteeism (the percentage of work time missed because of one's health in the past seven days), presenteeism (the percentage of impairment experienced while at work in the past seven days because of one's health), overall work productivity loss (an overall impairment estimate that is a combination of absenteeism and presenteeism), and activity impairment (the percentage of impairment in daily activities because of one's health in the past seven days). The sum of specific health problem impairment and impairment due to other health reasons is equal to impairment due to all health reasons. WPAI outcomes are expressed as impairment percentages, with higher numbers indicating greater impairment and less productivity, ie, worse outcomes. WPAI-UC is the specific disease version of the questionnaire.

9.1.22 Documentation of Screen Failure

Investigators must account for all subjects who sign informed consent.

If the subject is found to be not eligible during screening, the investigator should contact the IWRS as a notification of screen failure and complete the Screen Failure eCRF.

The primary reason for screen failure is recorded in the eCRF using the following categories:

- PTE/AE.
- Did not meet inclusion criteria or did meet exclusion criteria.
- Significant protocol deviation.
- Lost to follow-up.
- Voluntary withdrawal <specify reason>.
- Study termination.
- Other <specify reason>.

Subject numbers assigned to subjects who fail screening should not be reused. Re-screening of subjects will be assessed by the Medical Monitor on a case by case basis.

9.1.23 Documentation of Study Entrance

Only subjects who meet all of the inclusion criteria and none of the exclusion criteria at Week 0 are eligible for enrolment into the Induction Phase.

At Week 6 subjects will be assessed for eligibility for randomization into the Maintenance Phase.

If the subject is found to be not eligible for the study, the Investigator should record the primary reason for failure on the applicable eCRF.

9.2 Monitoring Subject Treatment Compliance

If a subject is persistently noncompliant with the study medication, it may be appropriate to withdraw the subject from the study. All subjects should be reinstructed about the dosing requirement during study contacts. The authorized study personnel conducting the re-education must document the process in the subject source records.

9.3 Schedule of Observations and Procedures

The schedule for all study-related procedures for all evaluations is shown in [Appendix A](#). Assessments should be completed at the designated visit/time point(s).

9.3.1 Screening

Subjects will be screened within 28 days prior to enrollment. Subjects will be screened in accordance with predefined inclusion and exclusion criteria as described in Section 7.0. See Section 9.1.22 for procedures for documenting screening failures.

Procedures to be completed at screening can be found in the schedule of events ([Appendix A](#)).

9.3.2 Enrollment/Randomization

Enrollment will take place at Week 0. If the subject has satisfied all of the inclusion criteria and none of the exclusion criteria, the subject should be enrolled using the IWRS. Subjects will be instructed on when the first dose of investigational drug will be given as described in Section 6.1. The procedure for documenting screening failures is provided in Section 9.1.22.

Eligible subjects will receive open-label infusions of vedolizumab IV 300 mg at Weeks 0 and 2, and will be assessed for clinical response (endoscopy score determined by a central reader) at Week 6. Subjects with clinical response at Week 6 will be randomized at a 2:1:1 ratio to receive beginning at Week 6 through Week 50:

- Injections of active vedolizumab SC 108 mg Q2W and placebo IV infusions Q8W (N=94).
- Infusions of active vedolizumab IV 300 mg Q8W and placebo SC injections Q2W (N=47).
- Placebo SC injections Q2W and placebo IV infusions Q8W (N=47).

Randomization will be stratified by:

- Concomitant use of oral corticosteroids.
- Remission status at Week 6.
- Previous TNF- α antagonists failure or concomitant immunomodulator (azathioprine, 6-mercaptopurine) use.

9.3.2.1 *Non-responders*

Subjects who are non-responders at Week 6 and hence are not randomized into the Maintenance Phase of the study will receive a third vedolizumab IV infusion at Week 6. Subjects who achieve a clinical response (by partial Mayo score) at Week 14 are eligible to enroll in the OLE study, while subjects who do not respond at Week 14 will be discontinued.

9.3.3 Final Visit or Early Termination

The Final Visit will be performed on Week 52 or at ET for all subjects.

For all subjects receiving study medication, the investigator must complete the End of Study eCRF page.

Subjects who complete the study will be offered entry into the OLE study after completion of the Week 52 assessment.

Subjects who are withdrawn from the study due to disease worsening (Section 3.5) will be offered entry into the OLE study.

From Week 14 onwards, subjects who are withdrawn from the study due to need for rescue medications, despite not meeting the criteria for disease worsening, will be offered entry into the OLE study. Need for rescue medications are defined in Section 7.3.1.

Subjects who are discontinued from the study due to study drug related AEs or to requiring surgical intervention for their UC will not be eligible to enroll into the OLE study.

9.3.4 Final Safety Follow-up Visit

For those subjects not entering the OLE study or are discontinued, a Final Safety Follow-up Visit will be performed 18 weeks after the last dose of study drug. Assessments will be completed per the schedule of events Week 68 Visit. For subjects that are not in response at Week 14, ET procedures will be performed at the Week 14 visit.

9.3.5 Post Study 6-Month Long-Term Follow-Up Survey

Upon completion of or early termination from the study, all subjects not entering the OLE study will be required to participate by telephone in a 6 month LTFU safety questionnaire (from the last dose received).

9.3.6 Unscheduled Visits Due to Disease Exacerbation

Subjects who are seen by the investigator or site staff at a time point not required by the protocol (ie, unscheduled visit) due to disease exacerbation will undergo the following:

- Physical examination.
- Vital signs assessment.
- Diary review.

- Collection of concomitant medications and procedures.
- Collection of AEs and SAEs.
- Clinical chemistry and hematology, as indicated.
- Partial or complete Mayo score.
- Flexible sigmoidoscopy, if indicated.
- PK sample collection.
- AVA sample collection.
- *C. difficile*, if indicated.

There is no minimum time for repeat evaluation by unscheduled visit in order to determine if a subject meets the criteria for disease worsening. In general, however, enough time should be provided for clinically meaningful change to occur.

9.4 Biological Sample Retention and Destruction

In this study, whole blood and mucosal tissue specimens for pharmacology and histology analysis will be collected as described. The samples will be sent to a central laboratory that processes the samples and serves as a secure storage facility. The sponsor and researchers working with the sponsor will have access to the samples collected and any test results. All samples collected during the study will be stored securely with limited access and the sponsor will require anyone who works with the samples to agree to hold the research information and any results in confidence.

Samples will be stored for no longer than 15 years after completion of the study. No samples will be stored for longer than permitted by the applicable law and samples will be destroyed upon notification from Takeda.

The sample will be labeled with a unique sample identifier similar to labeling in the main study but using a code that is different from the code attached to the health information and other clinical test results collected in the study. The sample and data are linked to personal health information with code numbers. This link means that the subject may be identified but only indirectly. The code numbers will be kept secure by or on behalf of the sponsor.

Subjects who consented and provided pharmacogenomic samples can withdraw their consent and request disposal of a stored sample (blood and/or tissue) at any time. The sponsor will be notified of consent withdrawal.

10.0 PRETREATMENT EVENTS (PTE), ADVERSE EVENTS (AE) AND PRODUCT COMPLAINTS (PC)

10.1 Definitions

10.1.1 PTEs

A Pre-Treatment Event (PTE) is defined as any untoward medical occurrence in a clinical investigation subject who has signed informed consent to participate in a study but prior to administration of any study medication; it does not necessarily have to have a causal relationship with study participation.

10.1.2 AEs

An AE is defined as any untoward medical occurrence in a clinical investigation subject administered a drug; it does not necessarily have to have a causal relationship with this treatment.

An AE can therefore be any unfavorable and unintended sign (eg, a clinically significant abnormal laboratory finding), symptom, or disease temporally associated with the use of a drug whether or not it is considered related to the drug.

In addition, drug-device AEs related to quality or malfunction will be collected.

10.1.3 Additional Points to Consider for PTEs and AEs

An untoward finding generally may:

- Indicate a new diagnosis or unexpected worsening of a pre-existing condition. (Intermittent events for pre existing conditions underlying disease should not be considered PTEs or AEs.)
- Necessitate therapeutic intervention.
- Require an invasive diagnostic procedure.
- Require discontinuation or a change in dose of study medication or a concomitant medication.
- Be considered unfavorable by the investigator for any reason.
- PTEs/AEs caused by a study procedure (eg, a bruise after blood draw) should be recorded as a PTE/AE.

Diagnoses vs signs and symptoms:

- Each event should be recorded to represent a single diagnosis. Accompanying signs (including abnormal laboratory values or ECG findings) or symptoms should NOT be recorded as additional AEs. If a diagnosis is unknown, sign(s) or symptom(s) should be recorded appropriately as a PTE(s) or as an AE(s).

Laboratory values and ECG findings:

- Changes in laboratory values or ECG parameters are only considered to be PTEs or AEs if they are judged to be clinically significant (ie, if some action or intervention is required or if the investigator judges the change to be beyond the range of normal physiologic fluctuation). A laboratory re-test and/or continued monitoring of an abnormal value are not considered an intervention. In addition, repeated or additional noninvasive testing for verification, evaluation or monitoring of an abnormality is not considered an intervention.
- If abnormal laboratory values or ECG findings are the result of pathology for which there is an overall diagnosis (eg, increased creatinine in renal failure), the diagnosis only should be reported appropriately as a PTE or as an AE.

Pre-existing conditions:

- Pre-existing conditions (present at the time of signing of informed consent) are considered concurrent medical conditions and should NOT be recorded as PTEs or AEs. Baseline evaluations (eg, laboratory tests, ECG, X-rays etc.) should NOT be recorded as PTEs unless related to study procedures. However, if the subject experiences a worsening or complication of such a concurrent condition, the worsening or complication should be recorded appropriately as a PTE (worsening or complication occurs before start of study medication) or an AE (worsening or complication occurs after start of study medication). Investigators should ensure that the event term recorded captures the change in the condition (eg, “worsening of...”).
- If a subject has a pre-existing episodic condition (eg, asthma, epilepsy) any occurrence of an episode should only be captured as a PTE/AE if the episodes become more frequent, serious or severe in nature, that is, investigators should ensure that the AE term recorded captures the change in the condition from Baseline (eg, “worsening of...”).
- If a subject has a degenerative concurrent condition (eg, cataracts, rheumatoid arthritis), worsening of the condition should only be captured as a PTE/AE if occurring to a greater extent to that which would be expected. Again, investigators should ensure that the AE term recorded captures the change in the condition (eg, “worsening of...”).

Worsening of PTEs or AEs:

- If the subject experiences a worsening or complication of a PTE after starting administration of the study medication, the worsening or complication should be recorded appropriately as an AE. Investigators should ensure that the AE term recorded captures the change in the condition (eg, “worsening of...”).
- If the subject experiences a worsening or complication of an AE after any change in study medication, the worsening or complication should be recorded as a new AE. Investigators should ensure that the AE term recorded captures the change in the condition (eg, “worsening of...”).

Changes in severity of AEs /Serious PTEs:

- If the subject experiences changes in severity of an AE/serious PTE, the event should be captured once with the maximum severity recorded.

Preplanned surgeries or procedures:

- Preplanned procedures (surgeries or therapies) that were scheduled prior to signing of informed consent are not considered PTEs or AEs. However, if a preplanned procedure is performed early (eg, as an emergency) due to a worsening of the pre-existing condition, the worsening of the condition should be captured appropriately as a PTE or an AE. Complications resulting from any planned surgery should be reported as AEs.

Elective surgeries or procedures:

- Elective procedures performed where there is no change in the subject's medical condition should not be recorded as PTEs or AEs, but should be documented in the subject's source documents. Complications resulting from an elective surgery should be reported as AEs.

Insufficient clinical response (lack of efficacy):

- Insufficient clinical response, efficacy, or pharmacologic action, should NOT be recorded as an AE. The investigator must make the distinction between exacerbation of pre-existing illness and lack of therapeutic efficacy.

Overdose:

- Cases of overdose with any medication without manifested side effects are NOT considered PTEs or AEs, but instead will be documented on an Overdose page of the eCRF. Any manifested side effects will be considered PTEs or AEs and will be recorded on the AE page of the eCRF.

10.1.4 SAEs

An SAE is defined as any untoward medical occurrence that at any dose:

1. Results in DEATH.
2. Is LIFE THREATENING.
 - The term "life threatening" refers to an event in which the subject was at risk of death at the time of the event; it does not refer to an event that hypothetically might have caused death if it were more severe.
3. Requires inpatient HOSPITALIZATION or prolongation of existing hospitalization.
4. Results in persistent or significant DISABILITY/INCAPACITY.
5. Is a CONGENITAL ANOMALY/BIRTH DEFECT.

6. Is an IMPORTANT MEDICAL EVENT that satisfies any of the following:
- May require intervention to prevent items 1 through 5 above.
 - May expose the subject to danger, even though the event is not immediately life threatening or fatal or does not result in hospitalization.
 - Includes any event or synonym described in the Takeda Medically Significant AE List (Table 10.a).

Table 10.a Takeda Medically Significant AE List

	Term
Acute respiratory failure/acute respiratory distress syndrome	Hepatic necrosis
Torsade de pointes / ventricular fibrillation / ventricular tachycardia	Acute liver failure Anaphylactic shock
Malignant hypertension	Acute renal failure
Convulsive seizure	Pulmonary hypertension
Agranulocytosis	Pulmonary fibrosis
Aplastic anemia	Confirmed or suspected endotoxin shock
Toxic epidermal necrolysis/Stevens-Johnson syndrome	Confirmed or suspected transmission of infectious agent by a medicinal product Neuroleptic malignant syndrome / malignant hyperthermia Spontaneous abortion / stillbirth and fetal death

PTEs that fulfill 1 or more of the serious criteria above are also to be considered SAEs and should be reported and followed up in the same manner (see Sections 10.2.2 and 10.3).

10.1.5 Special Interest AEs

A Special Interest Adverse Event (serious or nonserious) is one of scientific and medical concern specific to the compound or program, for which ongoing monitoring and rapid communication by the investigator to Takeda may be appropriate. Such events may require further investigation in order to characterize and understand them and would be described in protocols and instructions provided for investigators as to how and when they should be reported to Takeda. Refer to Section 10.2.1.4 for information for special interest AE reporting.

10.1.6 Severity of PTEs and AEs

The different categories of intensity (severity) are characterized as follows:

- Mild: The event is transient and easily tolerated by the subject.
Moderate: The event causes the subject discomfort and interrupts the subject's usual activities.
Severe: The event causes considerable interference with the subject's usual activities.

10.1.7 Causality of AEs

The relationship of each AE to study medication(s) will be assessed using the following categories:

- Related: An AE that follows a reasonable temporal sequence from administration of a drug (including the course after withdrawal of the drug), or for which possible involvement of the drug cannot be ruled out, although factors other than the drug, such as underlying diseases, complications, concomitant drugs and concurrent treatments, may also be responsible.
- Not Related: An AE that does not follow a reasonable temporal sequence from administration of a drug and/or that can reasonably be explained by other factors, such as underlying diseases, complications, concomitant drugs and concurrent treatments.

10.1.8 Relationship to Study Procedures

Relationship (causality) to study procedures should be determined for all PTEs and AEs.

The relationship should be assessed as Related if the investigator considers that there is reasonable possibility that an event is due to a study procedure. Otherwise, the relationship should be assessed as Not Related.

10.1.9 Start Date

The start date of the AE/PTE is the date that the first signs/symptoms were noted by the subject and/or physician.

10.1.10 Stop Date

The stop date of the AE/PTE is the date at which the subject recovered, the event resolved but with sequelae or the subject died.

10.1.11 Frequency

Episodic AEs/PTE (eg, vomiting) or those which occur repeatedly over a period of consecutive days are intermittent. All other events are continuous.

10.1.12 Action Concerning Study Medication

- Drug withdrawn – a study medication is stopped due to the particular AE.
- Dose not changed – the particular AE did not require stopping a study medication.
- Unknown – only to be used if it has not been possible to determine what action has been taken.
- Not Applicable – a study medication was stopped for a reason other than the particular AE eg, the study has been terminated, the subject died, dosing with study medication was already stopped before the onset of the AE.
- Dose Interrupted – the dose was interrupted due to the particular AE.

10.1.13 Outcome

- Recovered/Resolved – Subject returned to first assessment status with respect to the AE/PTE.
- Recovering/Resolving – the intensity is lowered by one or more stages: the diagnosis or signs/symptoms has almost disappeared; the abnormal laboratory value improved, but has not returned to the normal range or to baseline; the subject died from a cause other than the particular AE/PTE with the condition remaining “recovering/resolving”.
- Not recovered/not resolved – there is no change in the diagnosis, signs or symptoms; the intensity of the diagnosis, signs/ symptoms or laboratory value on the last day of the observed study period has got worse than when it started; is an irreversible congenital anomaly; the subject died from another cause with the particular AE/PTE state remaining “Not recovered/not resolved”.
- Resolved with sequelae – the subject recovered from an acute AE/PTE but was left with permanent/significant impairment (eg, recovered from a cardiovascular accident but with some persisting paresis).
- Fatal – the AEs/PTEs which are considered as the cause of death.
- Unknown – the course of the AE/PTE cannot be followed up due to hospital change or residence change at the end of the subject’s participation in the study.

10.1.14 Product Complaints

A product complaint (PC) is a verbal, written, or electronic expression that implies dissatisfaction regarding the identity, strength, purity, quality, or stability of a drug product and/or device (eg, prefilled syringe).

An investigator who is made aware of or identifies a potential PC should immediately report the event to Takeda in accordance with the contact list provided to the site. Whenever possible, the associated product should be maintained in accordance with the instructions pending further guidance from a Takeda representative. Refer to the appropriate study manual provided separately for additional information (depending on local regulations).

10.2 Procedures

10.2.1 Collection and Reporting of AEs

10.2.1.1 PTE and AE Collection Period

- Start of AE collection: AEs must be collected from start of study medication administration.
- End of AE collection: AEs must be collected for 18 weeks following the last dose of study medication.
- Collection of PTEs will commence from the time the subject signs the informed consent to participate in the study and continue until the subject is first administered study medication or

CONFIDENTIAL

until screen failure. For subjects who discontinue prior to study medication administration, PTEs are collected until the subject discontinues study participation.

- Collection of AEs will commence from the time that the subject is first administered study medication (enrollment). Routine collection of AEs will continue until 18 weeks after last dose.

10.2.1.2 PTE and AE Reporting

At each study visit, the investigator will assess whether any subjective AEs have occurred. A neutral question, such as “How have you been feeling since your last visit?” may be asked. Subjects may report AEs occurring at any other time during the study. Subjects experiencing a serious PTE must be monitored until the symptoms subside and any clinically relevant changes in laboratory values have returned to baseline or there is a satisfactory explanation for the change. Non-serious PTEs, related or unrelated to the study procedure, need not to be followed-up for the purposes of the protocol.

All subjects experiencing AEs, whether considered associated with the use of the study medication or not, must be monitored until the symptoms subside and any clinically relevant changes in laboratory values have returned to baseline or until there is a satisfactory explanation for the changes observed. All PTEs and AEs will be documented in the PTE/AE page of the eCRF, whether or not the investigator concludes that the event is related to the drug treatment. The following information will be documented for each event:

1. Event term.
2. Start and stop date (and time, if deemed directly related to the study drug administration).
3. Severity.
4. Investigator’s opinion of the causal relationship between the event and administration of study medication(s) (related or not related) (not completed for PTEs).
5. Investigator’s opinion of the causal relationship to study procedure(s), including the details of the suspected procedure.
6. Action concerning study medication (not applicable for PTEs).
7. Outcome of event.
8. Seriousness.

Several patient-reported outcomes measures will be used in this study (eg, IBDQ, EQ5D, WPAI-UC). They will not be used as a primary means to collect AEs. However, should the investigator become aware of a potential AE through the information collected with this instrument, proper follow-up with the subject for medical evaluation should be undertaken. Through this follow-up, if it is determined that an AE not previously reported has been identified, normal reporting requirements should be applied.

10.2.1.3 Adverse Event Collection Involving Medically Anticipated Clinical Events

UC is associated with certain characteristic signs and symptoms, including diarrhea and rectal bleeding, that may be present at baseline and persist or fluctuate based on the individual subject's disease history during the course of the study. These signs and symptoms will not be collected as AEs. These characteristics of disease activity will be regularly captured in the Mayo score.

Exacerbations of disease activity (eg, increase in the daily amount of rectal bleeding beyond the subject's normal fluctuation, new signs and symptoms of UC) will be collected as AEs and reported according to regulatory reporting requirements.

Extra-intestinal manifestations of the subject's disease (eg, arthralgia, arthritis, uveitis) that develop or worsen during the study are considered AEs.

10.2.1.4 Special Interest AE Reporting

If this special interest AE, which occurs during the treatment period or the follow-up period, is considered to be clinically significant based on the criteria below, it should be recorded in a special interest AE eCRF or SAE Form. The applicable form should be completed and reported to the SAE reporting contact in Section 1.1 within 24 hours.

Hypersensitivity Reactions (Including Injection Site Reactions)

Currently, there is no evidence to support the routine prophylactic administration of premedication (eg, antihistamines, corticosteroids) to subjects receiving vedolizumab; hence such premedications are unlikely to be necessary or beneficial. At the discretion of the investigator, however, subjects may be administered premedication prior to any study drug administration. Corticosteroids, if given as a premedication, should be limited to the day of administration.

Vedolizumab IV should be administered by a HCP prepared to manage hypersensitivity reactions including anaphylaxis, if they occur. Appropriate monitoring and medical support measure should be available for immediate use. Subjects should be observed for 2 hours following the first 2 infusions, at a minimum, and one hour after each subsequent infusion.

During clinic visits, subjects should be observed during the SC administration and for one hour following completion of the administration. Vedolizumab SC should be administered by the subject or caregiver in the presence of a HCP prepared to manage hypersensitivity reactions including anaphylaxis, if they occur. Appropriate monitoring and medical support measures should be available for immediate use.

Subjects and caregivers will be instructed to report the development of rash, hives, pruritus, flushing, urticaria, injections site pain, redness and/or swelling, etc. that may represent an administration-related reaction (ie, injection-site reaction or infusion-related reaction) to study medication. Subjects will be asked to report administration-related AEs to the sites immediately as they are experienced or after having received appropriate medical care. Appropriate treatment and follow-up will be determined by the investigator. If signs or symptoms of an administration-related reaction are observed during the administration of study medication, it should be immediately discontinued and the subject treated as medically appropriate. In the case of

a mild reaction, study drug administration may be reinitiated (with appropriate premedication and investigator supervision) at the discretion of the investigator. Subjects with a severe or serious administration-related reaction (eg, shortness of breath, wheezing, stridor, angioedema, life-threatening change in vital signs, severe injection site reactions) must be withdrawn from the study (see appropriate Study Manual).

In all cases of administration-related reaction, the medical monitor must be informed as soon as practical. The disposition of subjects with less severe administration-related reactions should be discussed with the medical monitor.

Serious Infections

Subjects will be monitored for signs and symptoms of infection and for lymphopenia during the study. Subjects with signs and symptoms suggestive of infections, including GI infections, will be treated as clinically indicated. Interventions may include antibiotic treatment, if appropriate and/or discontinuation of concomitant immunomodulators. Blood, sputum, urine, and/or stool cultures should be obtained as appropriate for the detection and diagnosis of infection. Withholding or terminating study drug administration may be considered as described in Section 7.4.

Malignancy

All cases of malignancies that are detected during the study will be reported as AEs. Local medical practices for the management of malignancies will apply. Subjects with history of malignancy (except for specific cancers) or at high risk for malignancy will be excluded from the study per the exclusion criteria.

Other

Other special interest AEs include liver injury and PML, which are discussed in Sections 10.2.3 and 11.2.1 respectively.

10.2.2 Collection and Reporting of SAEs

When an SAE occurs through the AE collection period it should be reported according to the following procedure:

A Takeda SAE eCRF or Form must be completed, in English, and signed by the investigator immediately or within 24 hours of first onset or notification of the event. The information should be completed as fully as possible but contain, at a minimum:

- A short description of the event and the reason why the event is categorized as serious.
- Subject identification number.
- Investigator's name.
- Name of the study medication(s).
- Causality assessment.

The SAE eCRF should be completed within 24 hours of first onset or notification of the event. However, as a back-up, if required, the SAE Form should be completed and reported to Takeda Pharmacovigilance or designee within 24 hours to the attention of the contact listed in Section 1.1.

Any SAE spontaneously reported to the investigator following the AE collection period should be reported to the sponsor if considered related to study participation.

Reporting of Serious PTEs will follow the procedure described for SAEs.

*Note: For Japanese sites, the investigator should report the detailed paper SAE report provided by sponsor or by the institution without delay after notification of initial information. Additional detailed follow-up data surrounding the serious adverse event that becomes available following the initial report should be communicated through the same channels as outlined above.

10.2.3 Reporting of Abnormal Liver Function Tests

If a subject is noted to have ALT or AST elevated $>3 \times \text{ULN}$ on 2 consecutive occasions, the abnormality should be recorded as an AE. In addition, an LFT Increases eCRF must be completed providing additional information on relevant recent history, risk factors, clinical signs and symptoms and results of any additional diagnostic tests performed.

If a subject is noted to have ALT or AST $>3 \times \text{ULN}$ and total bilirubin $>2 \times \text{ULN}$ for which an alternative etiology has not been identified, the event should be recorded as an SAE and reported as per Section 10.2.2. The investigator must contact the medical monitor for discussion of the relevant subject details and possible alternative etiologies, such as acute viral hepatitis A or B or other acute liver disease or medical history/concurrent medical conditions. Follow-up laboratory tests as described in Section 9.1.9 must also be performed. In addition, an LFT Increases eCRF must be completed and transmitted with the Takeda SAE Form (as per Section 10.2.2).

10.3 Follow-up of SAEs

If information not available at the time of the first report becomes available at a later date, the investigator should complete a follow-up SAE form or provide other written documentation and fax it immediately within 24 hours of receipt. Copies of any relevant data from the hospital notes (eg, ECGs, laboratory tests, discharge summary, postmortem results) should be sent to the addressee, if requested.

All SAEs should be followed up until resolution or permanent outcome of the event. The timelines and procedure for follow-up reports are the same as those for the initial report.

10.3.1 Safety Reporting to Investigators, IRBs or IECs, and Regulatory Authorities

The sponsor will be responsible for reporting all suspected unexpected serious adverse reactions (SUSARs) and any other applicable SAEs to regulatory authorities, including the European Medicines Agency (EMA), investigators and IRBs or IECs, as applicable, in accordance with national regulations in the countries where the study is conducted. Relative to the first awareness of the event by/or further provision to the sponsor or sponsor's designee, SUSARs will be

submitted to the regulatory authorities as expedited report within 7 days for fatal and life-threatening events and 15 days for other serious events, unless otherwise required by national regulations. The sponsor will also prepare an expedited report for other safety issues where these might materially alter the current benefit-risk assessment of an investigational medicinal product or that would be sufficient to consider changes in the investigational medicinal products administration or in the overall conduct of the trial. The investigational site also will forward a copy of all expedited reports to his or her IRB or IEC in accordance with national regulations.

11.0 STUDY-SPECIFIC COMMITTEES

11.1 Data Safety Monitoring Board

A Data Safety Monitoring Board (DSMB) independent from the sponsor will be established to review unblinded safety data from this study on a regular basis and to make appropriate recommendations regarding the safe conduct of the study.

A detailed charter will outline the activities and scope of the DSMB (eg, type of data reviewed, frequency of meetings and location of meetings).

11.2 Adjudication Committee

A PML Independent Adjudication Committee (IAC) will be implemented for this study. The PML IAC will consist of a panel of leading PML experts, including a neurologist, neuroradiologist, and a virologist.

11.2.1 CCI

CCI



CCI



12.0 DATA HANDLING AND RECORD KEEPING

The full details of procedures for data handling will be documented in the Data Management Plan. AEs, PTEs, medical history, and concurrent conditions will be coded using the Medical Dictionary for Regulatory Activities (MedDRA). Drugs will be coded using the World Health Organization (WHO) Drug Dictionary.

12.1 Electronic CRFs

Completed eCRFs are required for each subject who signs an informed consent.

The sponsor or its designee will supply investigative sites with access to eCRFs. The sponsor will make arrangements to train appropriate site staff in the use of the eCRFs. These forms are used to transmit the information collected in the performance of this study to the sponsor and regulatory authorities. eCRFs must be completed in English. Data are transcribed directly onto eCRFs.

After completion of the entry process, computer logic checks will be run to identify items, such as inconsistent dates, missing data, and questionable values. Queries may be issued by Takeda personnel (or designees) and will be answered by the site.

Corrections are recorded in an audit trail that captures the old information, the new information, identification of the person making the correction, the date the correction was made, and the reason for change.

The principal investigator must review the eCRFs for completeness and accuracy and must sign and date the appropriate eCRFs as indicated. Furthermore, the investigator must retain full responsibility for the accuracy and authenticity of all data entered on the eCRFs.

eCRFs will be reviewed for completeness and acceptability at the study site during periodic visits by study monitors. The sponsor or its designee will be permitted to review the subject's medical and hospital records pertinent to the study to ensure accuracy of the eCRFs. The completed eCRFs are the sole property of the sponsor and should not be made available in any form to third parties, except for authorized representatives of appropriate governmental health or regulatory authorities, without written permission of the sponsor.

12.2 Record Retention

1. The following procedure is applied for the countries except for Japan.

The investigator agrees to keep the records stipulated in Section 12.1 and those documents that include (but are not limited to) the study-specific documents, the identification log of all participating subjects, medical records, temporary media such as thermal sensitive paper, source worksheets, all original signed and dated informed consent forms, subject authorization forms regarding the use of personal health information (if separate from the informed consent forms), electronic copy of eCRFs, including the audit trail, and detailed records of drug disposition to enable evaluations or audits from regulatory authorities, the sponsor or its designees. Any source documentation printed on degradable thermal sensitive paper should be photocopied by the site and filed with the original in the subject's chart to ensure long term legibility. Furthermore,

CONFIDENTIAL

International Conference on Harmonisation (ICH) E6 Section 4.9.5 requires the investigator to retain essential documents specified in ICH E6 (Section 8) until at least 2 years after the last approval of a marketing application for a specified drug indication being investigated or, if an application is not approved, until at least 2 years after the investigation is discontinued and regulatory authorities are notified. In addition, ICH E6 Section 4.9.5 states that the study records should be retained until an amount of time specified by applicable regulatory requirements or for a time specified in the Clinical Study Site Agreement between the investigator and sponsor.

Refer to the Clinical Study Site Agreement for the sponsor's requirements on record retention. The investigator should contact and receive written approval from the sponsor before disposing of any such documents.

2. The following procedure is applied for Japanese site only.

The investigator and the head of the institution agree to keep the records stipulated in Section 12.1 and those documents that include (but are not limited to) the study-specific documents, the identification log of all participating subjects, medical records, temporary media such as thermal sensitive paper, source worksheets, all original signed and dated informed consent forms, subject authorization forms regarding the use of personal health information (if separate from the informed consent forms), electronic copy of eCRFs, including the audit trail, and detailed records of drug disposition to enable evaluations or audits from regulatory authorities, the sponsor or its designees. Any source documentation printed on degradable thermal sensitive paper should be photocopied by the site and filed with the original in the subject's chart to ensure long term legibility. Furthermore, International Conference on Harmonisation (ICH) E6 Section 4.9.5 requires the investigator and the head of the institution to retain essential documents specified in ICH E6 (Section 8) until at least 2 years after the last approval of a marketing application for a specified drug indication being investigated or, if an application is not approved, until at least 2 years after the investigation is discontinued and regulatory authorities are notified. In addition, ICH E6 Section 4.9.5 states that the study records should be retained until an amount of time specified by applicable regulatory requirements or for a time specified in the Clinical Study Site Agreement between the investigator and/or the head of the institution and sponsor.

Refer to the Clinical Study Site Agreement for the sponsor's requirements on record retention. The investigator and the head of the institution should contact and receive written approval from the sponsor before disposing of any such documents.

13.0 STATISTICAL METHODS

13.1 Statistical and Analytical Plans

A statistical analysis plan (SAP) will be prepared and finalized prior to database lock and unblinding of subjects' treatment assignments. This document will provide further details regarding the definition of analysis variables and analysis methodology to address all study objectives.

A blinded data review meeting will be conducted prior to unblinding of subjects' treatment assignment and database lock. This review will assess the accuracy and completeness of the study database, subject evaluability, and appropriateness of the planned statistical methods.

13.1.1 Analysis Sets

The Full Analysis Set (FAS) will include all randomized subjects who receive at least 1 dose of study drug. Subjects in this set will be analyzed according to the treatment they were randomized to receive.

The per-protocol (PP) population is a subset of the intent-to-treat population. The PP population consists of all subjects who do not violate the terms of the protocol in a way that would impact the study output significantly. All decisions to exclude subjects for the per-protocol population dataset will be made prior to the unblinding of the study. Analyses using the per-protocol population may be provided as a sensitivity analysis.

The Safety Analysis Set will include all subjects who receive at least 1 dose of study drug. Subjects in this set will be analyzed according to the treatment they actually received.

The PK evaluable population is defined as all subjects who receive at least 1 dose of study drug and have sufficient blood sampling to allow for PK evaluation.

13.1.2 Analysis of Demographics and Other Baseline Characteristics

Baseline and demographic information will be listed and summarized by treatment group and overall. For continuous variables, the summary will consist of descriptive statistics (number of subjects, mean, standard deviation, minimum, median, and maximum). For categorical variables, the summary will consist of number and percentage of subjects in each category.

Medical history and concurrent medical conditions will be summarized by system organ class and preferred term. Medication history and concomitant medications will be summarized by preferred term.

13.1.3 Efficacy Analysis

All statistical testing will be performed at 2-sided 0.05 level of significance. To control the overall Type I error rate for the comparison between vedolizumab SC and placebo groups for the primary and secondary endpoints, a hierarchical approach will be applied to the statistical testing of the secondary endpoints. The statistical inference for the first secondary endpoint of mucosal healing

will only be performed if the primary endpoint, proportion of subjects with clinical remission at Week 52, is statistically significant. The second secondary endpoint of durable clinical response will only be tested if the first secondary endpoint is statistically significant. Similarly, the third secondary endpoint of durable clinical remission will only be tested if the second secondary endpoint is statistically significant, and the fourth secondary endpoint of corticosteroids-free clinical remission will only be tested if the third secondary endpoint is statistically significant. Multiplicity will not be adjusted across additional endpoints.

The descriptive statistics of treatment effects and corresponding 95% CIs for the IV arm versus placebo for the primary and secondary efficacy endpoints will be presented.

The comparison between vedolizumab IV and placebo groups will be considered exploratory and hence will not be included in the multiplicity control procedure described above. All dichotomous efficacy endpoints will be analyzed using Cochran-Mantel-Haenszel tests for risk differences, stratified by randomization stratum. The descriptive statistics of treatment effects and corresponding 95% CIs for the IV arm versus placebo for the primary and secondary efficacy endpoints will be presented. All subjects with missing data for determination of endpoint status will be considered as a non-responder in the analysis.

13.1.4 Resource Utilization and Patient Reported Outcomes (PRO)

All statistical testing will be performed at 2-sided 0.05 level of significance. To control the overall Type I error rate for the comparison between vedolizumab SC and placebo groups, a hierarchy approach will be applied to the PRO endpoints if the primary endpoint is significant.

The order of testing of PRO endpoints in Section 5.2.3 will be finalized in SAP before database lock.

Changes from Baseline to Week 52 in IBDQ, EQ-5D scores and WPAI-UC components will be analyzed in an Analysis of Covariance model with treatment as a factor and baseline score as a covariate. Changes from Week 6 to Week 52 will be analyzed in a similar fashion.

13.1.5 Pharmacokinetic Analysis

Concentrations of vedolizumab in serum will be summarized by scheduled time points using descriptive statistics. Individual serum concentration data versus time will be presented in a data listing.

A separate Data Analysis Plan will be created to describe the population PK analysis approach for this study. The results of all PK parameters derived from population PK analysis will be described in more detail in a separate Population Pharmacokinetic Analysis Report. Other analyses or methods may be used, if appropriate.

13.1.6 Other Analysis

The proportion of subjects with positive AVA (transient and persistent) and proportion of subjects with positive neutralizing AVA during the study will be summarized at each visit.

A positive AVA subject is defined as a subject who has at least 1 positive AVA result in any post-baseline sample, and is further categorized as:

- Transiently positive: defined as subjects with confirmed positive AVA in 1 sample at a post-dose visit.
- Persistently positive: defined as subjects with confirmed positive AVA in 2 or more consecutive positive AVA samples at post-dose visits.

The serum titers of AVA are defined as low (<250), moderate (250-2500) and high (>6250). Note: these are subject to change depending on the dilution factor that is used at the time of testing.

The ECL assay has better drug tolerance than the ELISA assay used in previous clinical trials (including the phase 3 registration studies with vedolizumab IV), therefore allowing more samples that have higher drug levels or samples that have lower AVA titers to be detected.

The impact of immunogenicity on PK, efficacy and safety (including injection site reactions and infusion related reactions) will be explored.

Time to UC-related hospitalizations, colectomies, and UC-related hospitalizations procedures will be analyzed using a Wei-Lin-Weissfeld Cox-regression model with treatment group, baseline complete Mayo score, randomization stratum, and geographic region as independent variables. For each of the components, the treatment groups will be compared by log-rank tests, with Kaplan-Meier estimates of Week 24 and Week 48 event rates presented.

13.1.7 Safety Analysis

Safety analysis will be performed using the Safety Analysis Set. No statistical inference will be made for safety analyses.

The number and percentage of subjects with TEAEs (defined as any AEs, regardless of relationship to study drug), AESIs (ie, serious infections including opportunistic infection such as PML, malignancies, liver injury, infusion reactions, injection site reactions), and SAEs which occur on or after the first dose date and up to 18 weeks after the last dose date of the study drug in subjects who do not enroll in open-label extension study or up to the first dose of the open-label extension study in those who do, will be summarized by Medical Dictionary for Regulatory Activities (MedDRA) System Organ Class, High Level Term, and Preferred Term overall, by severity, and by relationship to study drug for each treatment group. Separate summaries will also be generated for treatment-related adverse events overall and by severity. In addition to incident rates, exposure adjusted AE rates will be summarized as well.

Change from baseline in clinical laboratory tests and vital signs will be summarized by treatment group. Subjects with markedly abnormal values for laboratory tests and vital signs will be tabulated.

Additional summaries of TEAEs will be provided that only include TEAEs that occur in the Maintenance Phase between the Week 6 dose and 18 weeks after the last dose date of the study drug, or up to the first dose of the open-label extension study, whichever comes first.

Data from the LTFU survey will be summarized descriptively.

The shift in ECG interpretation from Baseline will be summarized by treatment group. Physical examination findings and PML checklist data will be presented in data listings.

13.2 Interim Analysis and Criteria for Early Termination

No interim analysis is planned.

13.3 Determination of Sample Size

Assuming a clinical remission rate of 42% for vedolizumab and 16% for placebo at Week 52, a sample size of 94 subjects in the vedolizumab SC group and 47 subjects in the placebo group will provide 90% power at a 2-sided 0.05 level of significance. To ensure a randomized sample size of 188 subjects, assuming 47% of the subjects entering induction will achieve clinical response at Week 6, approximately 400 subjects will need to be enrolled into the study.

Assuming a mucosal healing rate of 52% for vedolizumab and 20% for placebo at Week 52, with a sample size of 94 subjects in the vedolizumab group and 47 subjects in the placebo group the first secondary endpoint of mucosal healing at Week 52 will be powered to at least 97% at a 2-sided 0.05 level of significance.

14.0 QUALITY CONTROL AND QUALITY ASSURANCE

14.1 Study-Site Monitoring Visits

Monitoring visits to the study site will be made periodically during the study to ensure that all aspects of the protocol are followed. Source documents will be reviewed for verification of data recorded on the eCRFs. Source documents are defined as original documents, data, and records. The investigator and institution guarantee access to source documents by the sponsor or its designee (contract research organization) and by the IRB or IEC.

All aspects of the study and its documentation will be subject to review by the sponsor or designee (as long as blinding is not jeopardized), including but not limited to the Investigator's Binder, study medication, subject medical records, informed consent documentation, documentation of subject authorization to use personal health information (if separate from the informed consent forms), and review of eCRFs and associated source documents. It is important that the investigator and other study personnel are available during the monitoring visits and that sufficient time is devoted to the process.

14.2 Protocol Deviations

The investigator should not deviate from the protocol, except where necessary to eliminate an immediate hazard to study subjects. Should other unexpected circumstances arise that will require deviation from protocol-specified procedures, the investigator should consult with the sponsor or designee (and IRB or IEC, as required) to determine the appropriate course of action. There will be no exemptions (a prospectively approved deviation) from the inclusion or exclusion criteria.

The site should document all protocol deviations in the subject's source documents. In the event of a significant deviation, the site should notify the sponsor or its designee (and IRB or EC, as required). Significant deviations include, but are not limited to, those that involve fraud or misconduct, increase the health risk to the subject, or confound interpretation of primary study assessment.

Significant protocol deviations will be entered into the eCRF, which is reviewed by the study sponsor or designee.

The procedure below applies to Japanese sites only.

The investigator can deviate and change from the protocol for any medically unavoidable reason, for example, to eliminate an immediate hazard to study subjects, without a prior written agreement with the sponsor or a prior approval from IRB. In the event of a deviation or change, the investigator should notify the sponsor and the head of the study site of the deviation or change as well as its reason in a written form, and then retain a copy of the written form. When necessary, the investigator may consult and agree with the sponsor on a protocol amendment. If the protocol amendment is appropriate, the amendment proposal should be submitted to the head of the study site as soon as possible and an approval from IRB should be obtained. The investigator should document all protocol deviations.

14.3 Quality Assurance Audits and Regulatory Agency Inspections

The study site also may be subject to quality assurance audits by the sponsor or designees. In this circumstance, the sponsor-designated auditor will contact the site in advance to arrange an auditing visit. The auditor may ask to visit the facilities where laboratory samples are collected, where the medication is stored and prepared, and any other facility used during the study. In addition, there is the possibility that this study may be inspected by regulatory agencies, including those of foreign governments (eg, the Food and Drug Administration (FDA), the United Kingdom Medicines and Healthcare products Regulatory Agency, the Pharmaceuticals and Medical Devices Agency of Japan). If the study site is contacted for an inspection by a regulatory body, the sponsor should be notified immediately. The investigator and institution guarantee access for quality assurance auditors to all study documents as described in Section 14.1.

15.0 ETHICAL ASPECTS OF THE STUDY

This study will be conducted with the highest respect for the individual participants (ie, subjects) according to the protocol, the ethical principles that have their origin in the Declaration of Helsinki, and the ICH Harmonised Tripartite Guideline for GCP. Each investigator will conduct the study according to applicable local or regional regulatory requirements and align his or her conduct in accordance with the “Responsibilities of the Investigator” that are listed in [Appendix B](#). The principles of Helsinki are addressed through the protocol and through appendices containing requirements for informed consent and investigator responsibilities.

15.1 IRB and/or IEC Approval

IRBs and IECs must be constituted according to the applicable state and federal/local requirements of each participating region. The sponsor or designee will require documentation noting all names and titles of members who make up the respective IRB or IEC. If any member of the IRB or IEC has direct participation in this study, written notification regarding his or her abstinence from voting must also be obtained. Those Americas sites unwilling to provide names and titles of all members due to privacy and conflict of interest concerns should instead provide a Federal Wide Assurance Number or comparable number assigned by the Department of Health and Human Services.

The sponsor or designee will supply relevant documents for submission to the respective IRB or IEC for the protocol’s review and approval. This protocol, the Investigator’s Brochure, a copy of the informed consent form, and, if applicable, subject recruitment materials and/or advertisements and other documents required by all applicable laws and regulations, must be submitted to a central or local IRB or IEC for approval. The IRB’s or IEC’s written approval of the protocol and subject informed consent must be obtained and submitted to the sponsor or designee before commencement of the study (ie, before shipment of the sponsor-supplied drug or study specific screening activity). The IRB or IEC approval must refer to the study by exact protocol title, number, and version date; identify versions of other documents (eg, informed consent form) reviewed; and state the approval date. The sponsor will ship drug and notify site once the sponsor has confirmed the adequacy of site regulatory documentation and, when applicable, the sponsor has received permission from competent authority to begin the trial. Until the site receives notification no protocol activities, including screening may occur.

Sites must adhere to all requirements stipulated by their respective IRB or IEC. This may include notification to the IRB or IEC regarding protocol amendments, updates to the informed consent form, recruitment materials intended for viewing by subjects, local safety reporting requirements, reports and updates regarding the ongoing review of the study at intervals specified by the respective IRB or IEC, and submission of the investigator’s final status report to IRB or IEC. All IRB and IEC approvals and relevant documentation for these items must be provided to the sponsor or its designee.

Subject incentives should not exert undue influence for participation. Payments to subjects must be approved by the IRB or IEC and sponsor.

CONFIDENTIAL

Regarding any future pharmacogenomic investigation using collected and stored specimens for Japan; the sponsor will create a research protocol for pharmacogenomics investigations and the research protocol will require prior approval of the respective IRB in Japan prior to use.

15.2 Subject Information, Informed Consent, and Subject Authorization

Written consent documents will embody the elements of informed consent as described in the Declaration of Helsinki and the ICH Guidelines for GCP and will be in accordance with all applicable laws and regulations. The informed consent form, subject authorization form (if applicable), and subject information sheet (if applicable) describe the planned and permitted uses, transfers, and disclosures of the subject's personal and personal health information for purposes of conducting the study. The informed consent form and the subject information sheet (if applicable) further explain the nature of the study, its objectives, and potential risks and benefits, as well as the date informed consent is given. The informed consent form will detail the requirements of the participant and the fact that he or she is free to withdraw at any time without giving a reason and without prejudice to his or her further medical care.

The investigator is responsible for the preparation, content, and IRB or IEC approval of the informed consent form and if applicable, the subject authorization form. The informed consent form, subject authorization form (if applicable), and subject information sheet (if applicable) must be approved by both the IRB or IEC and the sponsor prior to use.

The informed consent form, subject authorization form (if applicable), and subject information sheet (if applicable) must be written in a language fully comprehensible to the prospective subject. It is the responsibility of the investigator to explain the detailed elements of the informed consent form, subject authorization form (if applicable), and subject information sheet (if applicable) to the subject. Information should be given in both oral and written form whenever possible and in the manner deemed appropriate by the IRB or IEC. In the event the subject is not capable of rendering adequate written informed consent, then the subject's legally acceptable representative may provide such consent for the subject in accordance with applicable laws and regulations.

The subject, or the subject's legally acceptable representative, must be given ample opportunity to: (1) inquire about details of the study and (2) decide whether or not to participate in the study. If the subject, or the subject's legally acceptable representative, determines he or she will participate in the study, then the informed consent form and subject authorization form (if applicable) must be signed and dated by the subject, or the subject's legally acceptable representative, at the time of consent and prior to the subject entering into the study. The subject or the subject's legally acceptable representative should be instructed to sign using their legal names, not nicknames, using blue or black ballpoint ink. The investigator must also sign and date the informed consent form and subject authorization (if applicable) at the time of consent and prior to subject entering into the study; however, the sponsor may allow a designee of the investigator to sign to the extent permitted by applicable law.

Once signed, the original informed consent form, subject authorization form (if applicable), and subject information sheet (if applicable) will be stored in the investigator's site file. The

investigator must document the date the subject signs the informed consent in the subject's medical record. Copies of the signed informed consent form, the signed subject authorization form (if applicable), and subject information sheet (if applicable) shall be given to the subject.

All revised informed consent forms must be reviewed and signed by relevant subjects or the relevant subject's legally acceptable representative in the same manner as the original informed consent. The date the revised consent was obtained should be recorded in the subject's medical record, and the subject should receive a copy of the revised informed consent form.

15.3 Subject Confidentiality

The sponsor and designees affirm and uphold the principle of the subject's right to protection against invasion of privacy. Throughout this study, a subject's source data will only be linked to the sponsor's clinical study database or documentation via a unique identification number. As permitted by all applicable laws and regulations, limited subject attributes, such as sex, age, or date of birth, and subject initials may be used to verify the subject and accuracy of the subject's unique identification number.

To comply with ICH Guidelines for GCP and to verify compliance with this protocol, the sponsor requires the investigator to permit its monitor or designee's monitor, representatives from any regulatory authority (eg, FDA, Medicines and Healthcare products Regulatory Agency, Pharmaceuticals and Medical Devices Agency), the sponsor's designated auditors, and the appropriate IRBs and IECs to review the subject's original medical records (source data or documents), including, but not limited to, laboratory test result reports, ECG reports, admission and discharge summaries for hospital admissions occurring during a subject's study participation, and autopsy reports. Access to a subject's original medical records requires the specific authorization of the subject as part of the informed consent process (see Section 15.2).

Copies of any subject source documents that are provided to the sponsor must have certain personally identifiable information removed (ie, subject name, address, and other identifier fields not collected on the subject's eCRF).

15.4 Publication, Disclosure, and Clinical Trial Registration Policy

15.4.1 Publication and Disclosure

The investigator is obliged to provide the sponsor with complete test results and all data derived by the investigator from the study. During and after the study, only the sponsor may make study information available to other study investigators or to regulatory agencies, except as required by law or regulation. Except as otherwise allowable in the clinical study site agreement, any public disclosure (including publicly accessible websites) related to the protocol or study results, other than study recruitment materials and/or advertisements, is the sole responsibility of the sponsor.

The sponsor may publish any data and information from the study (including data and information generated by the investigator) without the consent of the investigator. Manuscript authorship for any peer-reviewed publication will appropriately reflect contributions to the production and

review of the document. All publications and presentations must be prepared in accordance with this section and the Clinical Study Site Agreement. In the event of any discrepancy between the protocol and the Clinical Study Site Agreement, the Clinical Study Site Agreement will prevail.

15.4.2 Clinical Trial Registration

In order to ensure that information on clinical trials reaches the public in a timely manner and to comply with applicable laws, regulations and guidance, Takeda will, at a minimum register interventional clinical trials it sponsors anywhere in the world on ClinicalTrials.gov or other publicly accessible websites before start of study, as defined in Takeda Policy/Standard. Takeda contact information, along with investigator's city, state (for Americas investigators), country, and recruiting status will be registered and available for public viewing.

For some registries, Takeda will assist callers in locating trial sites closest to their homes by providing the investigator name, address, and phone number to the callers requesting trial information. Once subjects receive investigator contact information, they may call the site requesting enrollment into the trial. The investigative sites are encouraged to handle the trial inquiries according to their established subject screening process. If the caller asks additional questions beyond the topic of trial enrollment, they should be referred to the sponsor.

Any investigator who objects to Takeda providing this information to callers must provide Takeda with a written notice requesting that their information not be listed on the registry site.

15.4.3 Clinical Trial Results Disclosure

Takeda will post the results of clinical trials on ClinicalTrials.gov or other publicly accessible websites, as required by Takeda Policy/Standard, applicable laws and/or regulations.

15.5 Insurance and Compensation for Injury

Each subject in the study must be insured in accordance with the regulations applicable to the site where the subject is participating. If a local underwriter is required, then the sponsor or sponsor's designee will obtain clinical study insurance against the risk of injury to clinical study subjects. Refer to the Clinical Study Site Agreement regarding the sponsor's policy on subject compensation and treatment for injury. If the investigator has questions regarding this policy, he or she should contact the sponsor or sponsor's designee.

16.0 REFERENCES

1. Loftus EV, Jr. Clinical epidemiology of inflammatory bowel disease: Incidence, prevalence, and environmental influences. *Gastroenterology* 2004;126(6):1504-17.
2. Shivananda S, Lennard-Jones J, Logan R, Fear N, Price A, Carpenter L, et al. Incidence of inflammatory bowel disease across Europe: is there a difference between north and south? Results of the European Collaborative Study on Inflammatory Bowel Disease (EC-IBD). *Gut* 1996;39(5):690-7.
3. Trallori G, Palli D, Saieva C, Bardazzi G, Bonanomi AG, d'Albasio G, et al. A population-based study of inflammatory bowel disease in Florence over 15 years (1978-92). *Scand J Gastroenterol* 1996;31(9):892-9.
4. Asakura K, Nishiwaki Y, Inoue N, Hibi T, Watanabe M, Takebayashi T. Prevalence of ulcerative colitis and Crohn's disease in Japan. *J Gastroenterol* 2009;44(7):659-65.
5. Summers RW, Switz DM, Sessions JT, Jr., Beckett JM, Best WR, Kern F, Jr., et al. National Cooperative Crohn's Disease Study: results of drug treatment. *Gastroenterology* 1979;77(4 Pt 2):847-69.
6. Akobeng AK, Gardener E. Oral 5-aminosalicylic acid for maintenance of medically-induced remission in Crohn's Disease. *Cochrane Database Syst Rev* 2005(1):CD003715.
7. Ford AC, Achkar JP, Khan KJ, Kane SV, Talley NJ, Marshall JK, et al. Efficacy of 5-aminosalicylates in ulcerative colitis: systematic review and meta-analysis. *Am J Gastroenterol* 2011;106(4):601-16.
8. Feagan BG, Macdonald JK. Oral 5-aminosalicylic acid for induction of remission in ulcerative colitis. *Cochrane Database Syst Rev* 2012;10:CD000543.
9. Kandiel A, Fraser AG, Korelitz BI, Brensinger C, Lewis JD. Increased risk of lymphoma among inflammatory bowel disease patients treated with azathioprine and 6-mercaptopurine. *Gut* 2005;54(8):1121-5.
10. Remicade (infliximab) 100 mg powder for concentrate for solution for infusion. Summary of Product Characteristics. Leiden, The Netherlands: Janssen Biologics B.V., 06 August 2013.
11. Humira (adalimumab) injection, for subcutaneous use. Full Prescribing Information. North Chicago, IL: AbbVie Inc., Revised May 2013.
12. Simponi (golimumab) injection, for subcutaneous use. Full Prescribing Information. Horsham, PA: Janssen Biotech, Inc., Revised January 2014.
13. Hanauer SB, Feagan BG, Lichtenstein GR, Mayer LF, Schreiber S, Colombel JF, et al. Maintenance infliximab for Crohn's disease: the ACCENT I randomised trial. *Lancet* 2002;359(9317):1541-9.

14. Colombel JF, Sandborn WJ, Rutgeerts P, Enns R, Hanauer SB, Panaccione R, et al. Adalimumab for maintenance of clinical response and remission in patients with Crohn's disease: the CHARM trial. *Gastroenterology* 2007;132(1):52-65.
15. Rutgeerts P, Sandborn WJ, Feagan BG, Reinisch W, Olson A, Johanns J, et al. Infliximab for induction and maintenance therapy for ulcerative colitis. *N Engl J Med* 2005;353(23):2462-76.
16. Thomson AB, Gupta M, Freeman HJ. Use of the tumor necrosis factor-blockers for Crohn's disease. *World J Gastroenterol* 2012;18(35):4823-54.
17. McIntyre PB, Pemberton JH, Wolff BG, Beart RW, Dozois RR. Comparing functional results one year and ten years after ileal pouch-anal anastomosis for chronic ulcerative colitis. *Dis Colon Rectum* 1994;37(4):303-7.
18. Ording Olsen K, Juul S, Berndtsson I, Oresland T, Laurberg S. Ulcerative colitis: female fecundity before diagnosis, during disease, and after surgery compared with a population sample. *Gastroenterology* 2002;122(1):15-9.
19. Penna C, Dozois R, Tremaine W, Sandborn W, LaRusso N, Schleck C, et al. Pouchitis after ileal pouch-anal anastomosis for ulcerative colitis occurs with increased frequency in patients with associated primary sclerosing cholangitis. *Gut* 1996;38(2):234-9.
20. Butcher EC, Williams M, Youngman K, Rott L, Briskin M. Lymphocyte trafficking and regional immunity. *Adv Immunol* 1999;72:209-53.
21. Salmi M, Jalkanen S. Lymphocyte homing to the gut: attraction, adhesion, and commitment. *Immunol Rev* 2005;206:100-13.
22. Briskin M, Winsor-Hines D, Shyjan A, Cochran N, Bloom S, Wilson J, et al. Human mucosal addressin cell adhesion molecule-1 is preferentially expressed in intestinal tract and associated lymphoid tissue. *Am J Pathol* 1997;151(1):97-110.
23. Erle DJ, Briskin MJ, Butcher EC, Garcia-Pardo A, Lazarovits AI, Tidswell M. Expression and function of the MAdCAM-1 receptor, integrin alpha 4 beta 7, on human leukocytes. *Immuno* 1994;153(2):517-28.
24. Soler D, Chapman T, Yang LL, Wyant T, Egan R, Fedyk ER. The binding specificity and selective antagonism of vedolizumab, an anti-alpha4beta7 integrin therapeutic antibody in development for inflammatory bowel diseases. *J Pharmacol Exp Ther* 2009;330(3):864-75.
25. Feagan BG, Rutgeerts P, Sands BE, Hanauer S, Colombel JF, Sandborn WJ, et al. Vedolizumab as induction and maintenance therapy for ulcerative colitis. *N Engl J Med* 2013;369(8):699-710.
26. Sandborn WJ, Feagan BG, Rutgeerts P, Hanauer S, Colombel JF, Sands BE, et al. Vedolizumab as induction and maintenance therapy for Crohn's disease. *N Engl J Med* 2013;369(8):711-21.
27. Sands B, Feagan B, Rutgeerts P, Colombel J-F, Sandborn W, Sy R, et al. Vedolizumab induction therapy for patients with Crohn's disease and prior anti-tumour necrosis factor

- antagonist failure: a randomised, placebo-controlled, double-blind, multicentre trial. *Journal of Crohn's and Colitis* 2013;7(Suppl. 1):Pages S5–S6. 8th Congress of the European Crohn's and Colitis Organisation.
28. Schellekens H. Factors influencing the immunogenicity of therapeutic proteins. *Nephrol Dial Transplant* 2005;20 Suppl 6:vi3-9.
 29. Porter S. Human immune response to recombinant human proteins. *J Pharm Sci* 2001;90(1):1-11.
 30. Irvine EJ. Development and subsequent refinement of the inflammatory bowel disease questionnaire: a quality-of-life instrument for adult patients with inflammatory bowel disease. *J Pediatr Gastroenterol Nutr* 1999;28(4):S23-7.
 31. Konig HH, Ulshofer A, Gregor M, von Tirpitz C, Reinshagen M, Adler G, et al. Validation of the EuroQol questionnaire in patients with inflammatory bowel disease. *Eur J Gastroenterol Hepatol* 2002;14(11):1205-15.
 32. Reilly MC, Gerlier L, Brabant Y, Brown M. Validity, reliability, and responsiveness of the work productivity and activity impairment questionnaire in Crohn's disease. *Clin Ther* 2008;30(2):393-404.
 33. Major EO. Progressive multifocal leukoencephalopathy in patients on immunomodulatory therapies. *Annu Rev Med* 2010;61:35-47.
 34. Steiner I, Berger JR. Update on progressive multifocal leukoencephalopathy. *Curr Neurol Neurosci Rep* 2012;12(6):680-6.
 35. Sandborn WJ, Colombel JF, Enns R, Feagan BG, Hanauer SB, Lawrance IC, et al. Natalizumab induction and maintenance therapy for Crohn's disease. *N Engl J Med* 2005;353(18):1912-25.
 36. TYSABRI (natalizumab) injection. Full Prescribing Information. Cambridge, MA: Biogen Idec Inc., Revised June 2013.

Appendix A Schedule of Study Procedures: Screening, Induction and Non-Responders

Study Procedures	Screening		Induction Open Label Treatment Period		Induction Observation		Week 6 Non-Responders Open Label Treatment Period	
	Days -28 to -1	Must occur Days -10 to -5	Week 0 (a) Day 1	Week 2 Day 15 (±2 days)	Week 6a(b) Day 43 (-5 days)	Week 6b(b) Day 43 (+3 days)	Week 6b Day 43 (+3 days)	Week 14 Day 99 (±3 days)
Clinic Visit Number	1		2	3	4	5	NR5	NR6
Informed consent	X							
PGx consent (optional)	X							
Register Subject in IWRS	X							
Demographics	X							
Tobacco use	X							
Medical and UC history	X							
Prior therapies for UC	X							
Physical examination (c)	X		X	X		X	X	X
Vital signs (d)	X		X	X		X	X	X
CCI								
CCI								
Diary instruction	X							
Diary review (f)			X	X		X	X	X
Concomitant medications and procedures	X (g)		X	X		X	X	X
12-lead ECG	X							
TB screening	X							
Mayo score (h)			X (i)	X		X (i)	X (i)	X
Flexi-Sigmoidoscopy (j)		X			X			
Colonic tissue samples (k) Including PGx mucosal tissue (tissue RNA) if consented to		X			X			
PGx blood (Genomic DNA + RNA)			X					

Footnotes are on last table page.

CONFIDENTIAL

Appendix A Schedule of Study Procedures: Screening, Induction and Non-Responders (continued)

Study Procedures	Screening		Induction Open Label Treatment Period		Induction Observation		Week 6 Non-Responders Open Label Treatment Period	
	Days -28 to -1	Must occur Days -10 to -5	Week 0 (a) Day 1	Week 2 Day 15 (±2 days)	Week 6a (b) Day 43 (-5 days)	Week 6b (b) Day 43 (+3 days)	Week 6b Day 43 (+3 days)	Week 14 Day 99 (±3 days)
Clinic Visit Number	1		2	3	4	5	NR5	NR6
Dosing IV Open Label (l)			X	X			X	
Enrollment IWRS			X					
Randomization IWRS						X		
Dosing Blinded IV/SC						X		
Assess eligibility for OLE								X (l)
PRO (IBDQ; EQ-5D)			X			X	X	
WPAI-UC			X			X	X	
UC-related events			X			X	X	
PTE/AE assessment (m)	X		X	X	X	X	X	X
SAE assessment (n)	X		X	X	X	X	X	X
Sample collection for:								
Serum pregnancy test (o)	X							
Urine pregnancy test (o)			X	X		X	X	X
HBV, HCV, HIV Screening	X							
FSH (p)	X							
Clinical chemistry	X		X	X		X	X	X
Hematology	X		X	X		X	X	X
Coagulation	X							
Urinalysis	X		X			X	X	
PK assessment (q)			X			X	X	X
AVA assessment (q)			X			X	X	X
Fecal calprotectin (r)	X					X	X	
<i>C. difficile</i> stool sample (s)	X							

Footnotes are on the last table page.

CONFIDENTIAL

Footnotes:

Day=day after the first dose. AVA=anti-vedolizumab antibodies, HBV=hepatitis B virus, HCV=hepatitis C virus, PK=pharmacokinetics, PML=progressive multifocal leukoencephalopathy.

Week 6A: Subjects will receive the clinical and endoscopical evaluation for Complete Mayo score determination at Week 6 (-5 days), as close as possible to the beginning of this evaluation period. Endoscopy subscore will be determined by central reading prior to Visit Week 6 (+3days).

Week 6B: Subjects who achieved clinical response (by Complete Mayo Score) will be randomized to receive vedolizumab blinded SC/IV/Placebo. Except for Non-Responders (NR by Complete Mayo Score) at Week 6 who will received a 3rd dose of open-label vedolizumab IV and be assessed at Week 14 for response (by partial Mayo Score).

(a) All Baseline (Week 0) assessments will be done pre-vedolizumab IV.

(b) Week 6a visit should be performed between Day 38 and 43 (inclusive) and Week 6b visit should be performed between Day 43 and 46 (inclusive). The Week 6a and 6b visits should not be performed on the same day.

(c) Physical examination: Clinically significant findings will be recorded as concurrent conditions if start prior to signing the informed consent, or as PTEs if start after signing of the informed consent and as AEs if starts after the first dose of study drug.

(d) Vital signs: Height (cm) and weight (kg; without shoes) will be measured during Screening. Weight and vital signs will also be measured on clinic dosing days prior to dosing.

(e) CCI

(f) Diary review: will be administered prior to each dosing event either in person at dosing occurring in the clinic during scheduled visits or over the phone when the subject is injecting outside of the clinic.

(g) Concomitant medications and procedures: Monitoring will begin at signing of the informed consent.

(h) The components of the Complete Mayo score to determine eligibility at Week 0 must be completed within 10 days prior to receiving the first dose of study drug. The components of the partial Mayo score are stool frequency, rectal bleeding, and physician rating of disease activity.

(i) Indicates Complete Mayo score calculation.

(j) Flexi-sigmoidoscopy: The endoscopy will be performed prior to Week 0 to assess eligibility for Enrollment and at Week 6a to assess eligibility for Randomization at Week 6b. Then at Wk52 or ET.

(k) Colonic tissue samples will be collected during each colonoscopy for histological analysis. The tissue samples taken for each collection timepoint for histology will be sub-divided prior to fixing for PGx tissue analysis if consented to by the subject.

(l) Week 0 and 2 dosing will be done with vedolizumab IV; from Week 6 randomization, dosing will be done with vedolizumab blinded SC/IV/Placebo. Non-Responders (NR by Complete Mayo Score) at Week 6 will received a 3rd dose of open-label vedolizumab IV and be assessed at Week 14 for response (by partial Mayo Score). Responders at Week 14 will be assessed for eligible for the Open-Label Extension (OLE) study. Non-Responders at Week 14 will be discontinued and returned to routine medical care.

(m) PTEs will be captured immediately following the signing of the informed consent at Screening, up until the first dose of study drug. Collection of AEs, to include concomitant medications, will begin following first dose of study drug and will continue through Week 68/Final Safety Visit. To be performed in person at dosing occurring in the clinic during scheduled visits.

(n) Collection of all SAEs will begin once the informed consent is signed and will continue through Week 68/ Final Safety Visit. To be performed in person at dosing occurring in the clinic during scheduled visits.

(o) All females of child bearing potential must have a serum pregnancy test at Screening and WK52/ET and Final Safety Visit. A urine pregnancy test will be completed for all females of child bearing potential prior to each dose of study drug injected during clinic visits.

(p) Follicle-stimulating hormone (FSH) level will be obtained for female subjects at Screening if they are postmenopausal by history (ie, last regular menstrual cycle >1 years) and not surgically sterile. The FSH result must be >40 IU/L for the subject to be permitted not to use adequate contraception.

(q) All PK and AVA samples will be obtained at predose (within 30 minutes prior to dosing).

(r) Fecal calprotectin stool sample should be the first bowel movement on the day of collection.

(s) A stool sample for culture, ova and parasite evaluation, and *C. difficile* assay will be obtained (if indicated) at Screening and at any time point during the study when a subject becomes symptomatic, including worsening or return of disease activity.

CONFIDENTIAL

Appendix A Schedule of Study Procedures (Maintenance Phase)

Study Procedures	Maintenance Period (a)																Final Safety Follow-up Visit (b)	Un-scheduled Visit (c)
	46-Week Randomised, Double Blind, Double-Dummy, Maintenance Phase. (Week 7 must occur +7 days after Randomization)																	
	Wk 7	Wk 8	Wk 10, 12 (d)	Wk 14	Wk 16, 18, 20 (d)	Wk 22	Wk 24, 26, 28 (d)	Wk 30	Wk 32, 34, 36 (d)	Wk 38	Wk 40, 42, 44 (d)	Wk 46	Wk 48 (d)	Wk 50	Wk 51	Wk 52/ET		
± 3 days	± 3 days	± 3 days	± 3 days	± 3 days	± 3 days	± 3 days	± 3 days	± 3 days	± 3 days	± 3 days	± 3 days	± 3 days	± 3 days	± 3 days	± 3 days	± 7 days	±1 week	
Clinic Visit Number	6	7		8		9		10		11		12		13	14	15	16	
Physical examination (e)				X		X		X		X		X		X		X	X	X
Vital signs (f)		X		X		X		X		X		X		X		X	X	X
PML checklist (g)		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	
PML wallet card																X		
Diary review	X	X		X		X		X		X		X		X		X		X
Concomitant medications and procedures	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Dosing - Blinded IV				X		X		X		X		X						
Dosing - Blinded SC		X	X	X	X	X	X	X	X	X	X	X	X	X				
Mayo score (h)				X		X		X		X		X		X		X(i)		X
Flexi-Sigmoidoscopy																X		
Colonic tissue samples (j) Including PGx mucosal tissue (tissue RNA) if consented to																X		
PRO (IBDQ; EQ-5D)								X								X		
WPAI-UC								X								X		
UC-related events																X		

Footnotes are on last table page.

CONFIDENTIAL

Appendix A Schedule of Study Procedures (Maintenance Phase) (continued)

Study Procedures	Maintenance Phase (a)																Final Safety Follow-up Visit (b)	Un-scheduled Visit (c)	
	46-Week Randomised, Double Blind, Double-Dummy, Maintenance Phase. (Week 7 must occur +7 days after Randomisation)																		
	Wk 7 ± 3 days	Wk 8 ± 3 days	Wks 10, 12 (d) ± 3 days	Wk 14 ± 3 days	Wks 16, 18, 20 (d) ± 3 days	Wk 22 ± 3 days	Wks 24, 26, 28 (d) ± 3 days	Wk 30 ± 3 days	Wks 32, 34, 36 (d) ± 3 days	Wk 38 ± 3 days	Wks 40, 42, 44 (d) ± 3 days	Wk 46 ± 3 days	Wk 48 (d) ± 3 days	Wk 50 ± 3 days	Wk 51 ± 3 days	Wk 52/ET ± 7 days			Wk 68 ± 1 week
Clinic Visit Number	6	7		8		9		10		11		12		13	14	15	16		
12-lead ECG																	X		
PTE/AE assessment (k)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SAE assessment (l)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sample collection for:																			
Serum pregnancy test (m)																	X	X	
Urine pregnancy test (m)			wk 10	X	wk 18	X	wk 26	X	wk 34	X	wk 42	X		X					
Clinical chemistry				X		X		X		X		X		X		X	X	X	
Hematology				X		X		X		X		X		X		X	X	X	
Coagulation						X										X			
Urinalysis																X			
PK assessment (n)	X	X		X		X		X		X		X		X	X	X	X	X	
AVA assessment (o)		X		X		X		X		X		X				X	X	X	
Fecal calprotectin (p)								X								X			
<i>C. difficile</i> stool sample (q)																		X (q)	

Footnotes are on the following page.

Footnotes:

Day=day after the first dose. AVA=anti-vedolizumab antibodies, HBV=hepatitis B virus, HCV=hepatitis C virus, PK=pharmacokinetics, PML=progressive multifocal leukoencephalopathy.

- (a) Maintenance Phase: There should be a minimum of 7 days between 2 consecutive doses.
- (b) Final Safety Follow-up visit: For subjects not enrolling in the OLE study. Subjects discontinued from the study for any reason will complete the Early Termination (ET) Visit and the Final Safety Visit (18-weeks post last dose) and LTFU survey (6-months post last dose).
- (c) Subjects seen at an unscheduled visit for disease exacerbation or SAE will complete the Unscheduled Visit assessments.
- (d) Non clinic visits. Subject will inject once the site has confirmed they can via the pre-dose phone call.
- (e) Physical examination: Clinically significant findings will be recorded as AEs if they start after the first dose of study drug.
- (f) Vital signs: Weight and vital signs will also be measured on clinic dosing days prior to dosing.
- (g) PML checklist: will be administered prior to each dosing event. The PML subjective checklist will be administered in person at dosing occurring in the clinic during scheduled visits. The PML subjective checklist will be administered over the phone when the subject is injecting outside of the clinic.
- (h) The components of the partial Mayo score are stool frequency, rectal bleeding, and physician rating of disease activity.
- (i) Indicates Complete Mayo score calculation.
- (j) Colonic tissue samples will be collected during each colonoscopy for histological analysis. The tissue samples taken for each collection timepoint for histology will be sub-divided prior to fixing for PGx tissue analysis if consented to by the subject.
- (k) Collection of AEs, to include concomitant medications, will begin following first dose of study drug and will continue through Week 68/Final Safety Visit. To be performed in person at dosing occurring in the clinic during scheduled visits. To be performed over the phone at dosing occurring outside of the clinic.
- (l) Collection of all SAEs will continue through Week 68/ Final Safety Visit. To be performed in person at dosing occurring in the clinic during scheduled visits. To be performed over the phone at dosing occurring outside of the clinic.
- (m) All females of child bearing potential must have a serum pregnancy test at WK52/ET and Final Safety Visit. A urine pregnancy test will be completed for all females of child bearing potential prior to each dose of study drug injected during clinic visits, as well as at Weeks 10, 18, 26, 34, and 42 prior to injecting study drug outside of the clinic.
- (n) PK samples at Weeks 7, 51 and 52 can be collected at anytime during the visit. All other PK samples will be obtained at predose (within 30 minutes prior to dosing). The Week 68 PK sample collection will only occur in subjects who will not enroll in the open label extension study.
- (o) All AVA samples will be obtained at predose (within 30 minutes prior to dosing). The Week 68 AVA sample collection will only occur in subjects who will not enroll in the open label extension study.
- (p) Fecal calprotectin stool sample should be the first bowel movement on the day of collection.
- (q) A stool sample for culture, ova and parasite evaluation, and *C. difficile* assay will be obtained (if indicated) at any time point during the study when a subject becomes symptomatic, including worsening or return of disease activity.

Appendix B Responsibilities of the Investigator

Clinical research studies sponsored by the sponsor are subject to ICH GCP and all the applicable local laws and regulations. The responsibilities imposed on Investigators from the FDA are summarized in the “Statement of Investigator” (Form FDA 1572) which must be completed and signed before the Investigator may participate in this study.

The investigator agrees to assume the following responsibilities:

1. Conduct the study in accordance with the protocol.
2. Personally conduct or supervise the staff who will assist in the protocol.
3. Ensure that study related procedures, including study specific (non routine/non standard panel) Screening assessments are NOT performed on potential subjects, prior to the receipt of written approval from relevant governing bodies/authorities.
4. Ensure that all colleagues and employees assisting in the conduct of the study are informed of these obligations.
5. Secure prior approval of the study and any changes by an appropriate IRB/IEC that conform to 21 CFR Part 56, ICH, and local regulatory requirements.
6. Ensure that the IRB/IEC will be responsible for initial review, continuing review, and approval of the protocol. Promptly report to the IRB/IEC all changes in research activity and all anticipated risks to subjects. Make at least yearly reports on the progress of the study to the IRB/IEC, and issue a final report within 3 months of study completion.
7. Ensure that requirements for informed consent, as outlined in 21 CFR Part 50, ICH and local regulations, are met.
8. Obtain valid informed consent from each subject who participates in the study, and document the date of consent in the subject’s medical chart. Valid informed consent is the most current version approved by the IRB/IEC. Each informed consent form should contain a subject authorization section that describes the uses and disclosures of a subject’s personal information (including personal health information) that will take place in connection with the study. If an informed consent form does not include such a subject authorization, then the investigator must obtain a separate subject authorization form from each subject or the subject’s legally acceptable representative.
9. Prepare and maintain adequate case histories of all persons entered into the study, including eCRFs, hospital records, laboratory results, etc, and maintain these data for a minimum of 2 years following notification by the sponsor that all investigations have been discontinued or that the regulatory authority has approved the marketing application. The investigator should contact and receive written approval from the sponsor before disposing of any such documents.
10. Allow possible inspection and copying by the regulatory authority of GCP-specified essential documents.

11. Maintain current records of the receipt, administration, and disposition of sponsor-supplied drugs, and return all unused sponsor-supplied drugs to the sponsor.
12. Report adverse reactions to the sponsor promptly. In the event of an SAE, notify the sponsor within 24 hours.

Appendix C Elements of the Subject Informed Consent

In seeking informed consent, the following information shall be provided to each subject:

1. A statement that the study involves research.
2. An explanation of the purposes of the research.
3. The expected duration of the subject's participation.
4. A description of the procedures to be followed, including invasive procedures.
5. The identification of any procedures that are experimental.
6. The estimated number of subjects involved in the study.
7. A description of the subject's responsibilities.
8. A description of the conduct of the study.
9. A statement describing the treatment(s) and the probability for random assignment to each treatment.
10. A description of the possible side effects of the treatment that the subject may receive.
11. A description of any reasonably foreseeable risks or discomforts to the subject and, when applicable, to an embryo, fetus, or nursing infant.
12. A description of any benefits to the subject or to others that reasonably may be expected from the research. When there is no intended clinical benefit to the subject, the subject should be made aware of this.
13. Disclosures of appropriate alternative procedures or courses of treatment, if any, that might be advantageous to the subject and their important potential risks and benefits.
14. A statement describing the extent to which confidentiality of records identifying the subject will be maintained, and a note of the possibility that regulatory agencies, auditor(s), IRB/IEC, and the monitor may inspect the records. By signing a written informed consent form, the subject or the subject's legally acceptable representative is authorizing such access.
15. For research involving more than minimal risk, an explanation as to whether any compensation and an explanation as to whether any medical treatments are available if injury occurs and, if so, what they consist of or where further information may be obtained.
16. The anticipated prorated payment(s), if any, to the subject for participating in the study.
17. The anticipated expenses, if any, to the subject for participating in the study.
18. An explanation of whom to contact for answers to pertinent questions about the research (investigator), subject's rights, and IRB/IEC and whom to contact in the event of a research-related injury to the subject.

19. A statement that participation is voluntary, that refusal to participate will involve no penalty or loss of benefits to which the subject otherwise is entitled, and that the subject may discontinue participation at any time without penalty or loss of benefits to which the subject is otherwise entitled.
20. The consequences of a subject's decision to withdraw from the research and procedures for orderly termination of participation by the subject.
21. A statement that the subject or the subject's legally acceptable representative will be informed in a timely manner if information becomes available that may be relevant to the subject's willingness to continue participation in the study.
22. A statement that results of pharmacogenomic analysis will not be disclosed to an individual, unless prevailing laws require the sponsor to do so.
23. The foreseeable circumstances or reasons under which the subject's participation in the study may be terminated.
24. A written subject authorization (either contained within the informed consent form or provided as a separate document) describing to the subject the contemplated and permissible uses and disclosures of the subject's personal information (including personal health information) for purposes of conducting the study. The subject authorization must contain the following statements regarding the uses and disclosures of the subject's personal information:
 - a) that personal information (including personal health information) may be processed by or transferred to other parties in other countries for clinical research and safety reporting purposes, including, without limitation, to the following: (1) Takeda, its affiliates, and licensing partners; (2) business partners assisting Takeda, its affiliates, and licensing partners; (3) regulatory agencies and other health authorities; and (4) IRBs/IECs;
 - b) it is possible that personal information (including personal health information) may be processed and transferred to countries that do not have data protection laws that offer subjects the same level of protection as the data protection laws within this country; however, Takeda will make every effort to keep your personal information confidential, and your name will not be disclosed outside the clinic unless required by law;
 - c) that personal information (including personal health information) may be added to Takeda's research databases for purposes of developing a better understanding of the safety and effectiveness of the study medication(s), studying other therapies for patients, developing a better understanding of disease, and improving the efficiency of future clinical studies;
 - d) that subjects agree not to restrict the use and disclosure of their personal information (including personal health information) upon withdrawal from the study to the extent that the restricted use or disclosure of such information may impact the scientific integrity of the research; and

- e) that the subject's identity will remain confidential in the event that study results are published.
25. Female subjects of childbearing potential (eg, nonsterilized, premenopausal female subjects) who are sexually active must use adequate contraception (as defined in the informed consent) from Screening throughout the duration of the study. Regular pregnancy tests will be performed throughout the study for all female subjects of childbearing potential. If a subject is found to be pregnant during study, study medication will be discontinued and the investigator will offer the subject the choice to receive unblinded treatment information.
 26. Male subjects must use adequate contraception (as defined in the informed consent) from Screening throughout the duration of the study. If the partner or wife of the subject is found to be pregnant during the study, the investigator will offer the subject the choice to receive unblinded treatment information.
 27. A statement that clinical trial information from this trial will be publicly disclosed in a publicly accessible website, such as ClinicalTrials.gov.

Appendix D Investigator Consent to Use of Personal Information

Takeda will collect and retain personal information of investigator, including his or her name, address, and other personally identifiable information. In addition, investigator's personal information may be transferred to other parties located in countries throughout the world (eg, the United Kingdom, United States, and Japan), including the following:

- Takeda, its affiliates, and licensing partners.
- Business partners assisting Takeda, its affiliates, and licensing partners.
- Regulatory agencies and other health authorities.
- IRBs and IECs.

Investigator's personal information may be retained, processed, and transferred by Takeda and these other parties for research purposes including the following:

- Assessment of the suitability of investigator for the study and/or other clinical studies.
- Management, monitoring, inspection, and audit of the study.
- Analysis, review, and verification of the study results.
- Safety reporting and pharmacovigilance relating to the study.
- Preparation and submission of regulatory filings, correspondence, and communications to regulatory agencies relating to the study.
- Preparation and submission of regulatory filings, correspondence, and communications to regulatory agencies relating to other medications used in other clinical studies that may contain the same chemical compound present in the study medication.
- Inspections and investigations by regulatory authorities relating to the study.
- Self-inspection and internal audit within Takeda, its affiliates, and licensing partners.
- Archiving and audit of study records.
- Posting investigator site contact information, study details and results on publicly accessible clinical trial registries, databases, and websites.

Investigator's personal information may be transferred to other countries that do not have data protection laws that offer the same level of protection as data protection laws in investigator's own country.

Investigator acknowledges and consents to the use of his or her personal information by Takeda and other parties for the purposes described above.

Appendix E Collection, Shipment, and Storage of Pharmacogenomic Samples

Sample Collection

Collect two whole blood samples (3 mL per sample) for deoxyribonucleic acid (DNA) isolation will be collected before dosing on Day 1 from each subject in the study, into plastic K₂ ethylenediamine-tetraacetic acid (EDTA) spray-coated tubes.

If necessary and feasible, a second aliquot of blood may be taken if isolation of DNA from the first sample was not successful or possible. Collect two whole blood samples (2.5 mL per sample) will be collected at each time point at predose on Day 1 for RNA pharmacogenomic analysis from each subject in the study, into a PaxGene™ tube.

For detailed instructions on sample collection and storage follow the laboratory manual provided by the central laboratory.

Sample Shipment

Ship samples only on Monday, Tuesday, or Wednesday, and at least 2 days prior to a national holiday, to minimize the possibility of samples in transit over a weekend or holiday. The laboratory must confirm arrival of the shipped samples.

For instructions on shipping and packing follow the laboratory manual and shipping instructions provided by the central laboratory.

Before shipping, ensure the sample tubes are tightly sealed.

Sample Storage

The DNA and RNA samples will be stored in a secure storage space with adequate measures to protect confidentiality. The samples will be retained while research on vedolizumab continues for up to but not longer than 15 years or as required by applicable law.

For Japan, please refer to the appropriate study manual provided separately for additional information.

Appendix F Mayo Scoring System for the Assessment of Ulcerative Colitis Activity

Category (a)

Stool frequency (b)

- 0 = Normal no. of stools for this patient
 - 1 = 1 to 2 stools more than normal
 - 2 = 3 to 4 stools more than normal
 - 3 = 5 or more stools more than normal
- Sub score, 0 to 3
-

Rectal bleeding (c)

- 0 = No blood seen
 - 1 = Streaks of blood with stool less than half the time
 - 2 = Obvious blood with stool most of the time
 - 3 = Blood alone passes
- Sub score, 0 to 3
-

Findings on endoscopy

- 0 = Normal or inactive disease
 - 1 = Mild disease (erythema, decreased vascular pattern, mild friability)
 - 2 = Moderate disease (marked erythema, lack of vascular pattern, friability, erosions)
 - 3 = Severe disease (spontaneous bleeding, ulceration)
- Sub score, 0 to 3; 0 = Normal or inactive disease
-

Physician's global assessment (d)

- 0 = Normal
 - 1 = Mild disease
 - 2 = Moderate disease
 - 3 = Severe disease
- Sub score, 0 to 3
-

(a) The Mayo score ranges from 0–12, with higher scores indicating more severe disease. Partial Mayo score excludes endoscopy and ranges from 0–9.

(b) Each patient serves as his or her own control to establish the degree of abnormality of the stool frequency.

(c) The daily bleeding score represents the most severe bleeding of the day.

(d) The physician's global assessment acknowledges the 3 other criteria, the patient's daily recollection of abdominal discomfort and general sense of well-being, and other observations, such as physical findings and the patient's performance status.

Adapted from: Schroeder KW, Tremaine WJ, Ilstrup DM. Coated oral 5-aminosalicylic acid therapy for mildly to moderately active ulcerative colitis. A randomized study. *N Engl J Med* 1987; 317 (26):1625-9.

Appendix G Detailed Description of Amendments to Text

The primary sections of the protocol affected by the changes in Amendment No. 05 is indicated. The corresponding text has been revised throughout the protocol.

Change 1: Amendment of visit window for Week 6a.

The primary change occurs in [Appendix A Schedule of Study Procedures: Screening, Induction and Non-Responders](#):

Formerly read: Week 6a(b)
 Day 43
 (-3 days)

Now reads: Week 6a(b)
 Day 43
 (-5 days)

Rationale for Amendment:

Visit window extended to adjust for clinical practice in Japan.

Sections that also contain this change are:

- Footnotes in [Appendix A Schedule of Study Procedures: Screening, Induction and Non-Responders](#).

Change 2: Clarification to sponsor address in Japan.

The primary change occurs on page 1.

Formerly read: ~~Takeda Development Center Japan,~~
 Takeda Pharmaceutical Company Limited,
 1-1, Doshomachi 4-Chome, Chuo-ku Osaka 540-8645, Japan

Now reads: Takeda Pharmaceutical Company Limited,
 1-1, Doshomachi 4-Chome, Chuo-ku Osaka 540-8645, Japan

Rationale for Amendment:

Administrative change to the sponsor address in Japan.

Change 3: Corrected typographical errors, punctuation, grammar, and formatting.

ELECTRONIC SIGNATURES

Signed by	Meaning of Signature	Server Date (dd-MMM-yyyy HH:mm 'UTC')
PPD	Clinical Pharmacology Approval	29-Sep-2016 11:55 UTC
	Biostatistics Approval	29-Sep-2016 19:49 UTC
	Clinical Science Approval	29-Sep-2016 22:51 UTC
	Clinical VP Approval	30-Sep-2016 12:39 UTC